

**No. 16-1361**

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IN THE  
**United States Court of Appeals**  
FOR THE FEDERAL CIRCUIT

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INTELLECTUAL VENTURES II LLC,

*Patent Owner-Appellant,*

v.

MOTOROLA MOBILITY LLC,

*Petitioner-Appellee,*

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APPEAL FROM THE PATENT TRIAL AND APPEAL BOARD  
CASE NO. IPR2014-00504

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**BRIEF OF APPELLANT INTELLECTUAL VENTURES II LLC**

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March 25, 2016

**CERTIFICATE OF INTEREST**

Counsel for Patent Owner-Appellant Intellectual Ventures I LLC hereby certifies the following:

1. The full name of every party represented by me is:

Intellectual Ventures II LLC

2. The name of the real party in interest (if the party named in the caption is not the real party in interest) represented by me is:

Intellectual Ventures II LLC

3. All parent corporations and any publicly held companies that own more than 10 percent or more of the stock of the party represented by me are:

None

4. The name of all law firms and the partners or associates that appeared for the party now represented by me in the agency or are expected to appear in this Court are:

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Dated: March 25, 2016

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**STATEMENT OF RELATED CASES**

The patent at issue in this appeal is involved in a co-pending stayed litigation, *Intellectual Ventures I LLC et al. v. Motorola Mobility LLC*, Civil Action No. 0:13-cv-61358, in the U.S. District Court for the Southern District of Florida. There has been and is no other appeal from the *inter partes* review at issue in this appeal in this or any other appellate court.

## **I. STATEMENT OF JURISDICTION**

This appeal arises from an *Inter Partes* Review before the Patent Trial and Appeal Board (“Board”) of U.S. Patent No. 7,382,771 (“the ’771 Patent”) entitled “Mobile Wireless Hotspot System.” *See* 35 U.S.C. §§ 311–319. The Board issued a Final Written Decision under 35 U.S.C. § 318(a), finding claims 1–4, 7, and 18 of the ’771 Patent unpatentable as anticipated and obvious. All of the Board’s bases of unpatentability rely upon U.S. Patent Application Publication No. 2004/0085944 to Boehm (“Boehm”), which is alleged prior art to the ’771 patent under 35 U.S.C. § 102(e) by about four months. The Patent Owner, Intellectual Ventures II LLC (“IV”), timely appealed. This Court has jurisdiction pursuant to 35 U.S.C. § 141.

## **II. STATEMENT OF THE ISSUES**

1. In analyzing IV’s evidence to swear behind the Boehm 102(e) reference, did the Board err as a matter of law when it applied a different claim construction to evidence of corroboration (explicitly requiring authentication and control in a LAN routing system) than to evidence of obviousness and anticipation (explicitly not requiring any such authentication or control in a LAN routing system)?

2. In that same context, did the Board err as a matter of law by imposing upon IV a legally incorrect corroboration standard, requiring proof that the

corroborating evidence affirmatively disclosed every claim limitation independently of the inventor's testimony, rather than the legally correct Rule of Reason standard, in which all relevant corroborating evidence is considered to determine if the inventor's testimony is credible?

### **III. STATEMENT OF THE CASE AND FACTS**

The original assignee of the '771 Patent was In Motion Technology, Inc., a company founded by the inventors of the '771 Patent to develop and commercialize the claimed invention. JA47, JA1311 ¶ 7. Current Patent Owner IV later acquired the '771 Patent. Appellee Motorola Mobility requested that the Board institute an *Inter Partes* Review of claims 1–4, 7, and 18 of the '771 Patent and proposed five grounds of unpatentability. JA62–125. The Board instituted the IPR on three of the five proposed grounds, all of which rely upon the Boehm reference qualifying as prior art under 35 U.S.C. § 102(e) based on a filing predating the '771 Patent by about four months. During the IPR trial, IV presented testimony (JA1309–1342) and corroborating evidence to swear behind the Boehm reference (JA1233–1270; JA1343–1412; JA1538–1551) demonstrating that the inventors made and successfully tested a mobile wireless hotspot system having all of the claimed features before the Boehm filing date. Nonetheless, the Board ultimately adjudged that the challenged patent claims are unpatentable as

anticipated by and obvious in view of, *inter alia*, the Boehm reference. JA39. IV now appeals that judgment.

**A. The '771 Patent**

The '771 Patent, filed March 13, 2003, describes a significant advance in Internet connectivity. JA47. At that time, people could access the Internet with their personal “client devices” (*e.g.*, laptops, cell phones, personal digital assistants, or other mobile devices) at a variety of public locations, such as coffee shops, hotels, conference centers, and airports. JA58 at 1:17–29. These public places had, on the premises, Wireless LAN Access Points, or WiFi “hotspots,” that were connected to the Internet via conventional wires. *Id.* Client devices could wirelessly connect to these wired hotspots using the IEEE 802.11 wireless communications standard, thereby providing Internet access to the wireless client devices. *Id.* A wired hotspot located on the premises was necessary because the IEEE 802.11 standard supports short-range communications only, so wireless client devices could not connect directly to far-away Internet servers. *Id.* at 1:30–40.

Before the invention described in the '771 Patent, however, people could not use a wireless client device to reliably connect to the Internet from mobile locations, such as a car or airplane. *Id.* at 1:63–2:9. By their mobile nature, such locations could not rely on a hotspot with a wired Internet connection. *Id.* Further,

wireless client devices lacked receivers that could reliably connect directly to Internet servers.

The inventors of the '771 Patent conceived of a mobile wireless hotspot that has both long-range wireless Internet access and a local wireless hotspot. *Id.* at 2:13–19. The long-range wireless Internet access allows the mobile wireless hotspot to connect to Internet servers located remotely from the hotspot. *Id.* The local wireless hotspot, in turn, connects to client devices in the vicinity of the wireless hotspot, thereby providing the client devices with Internet access. *Id.* at 2:20-23.

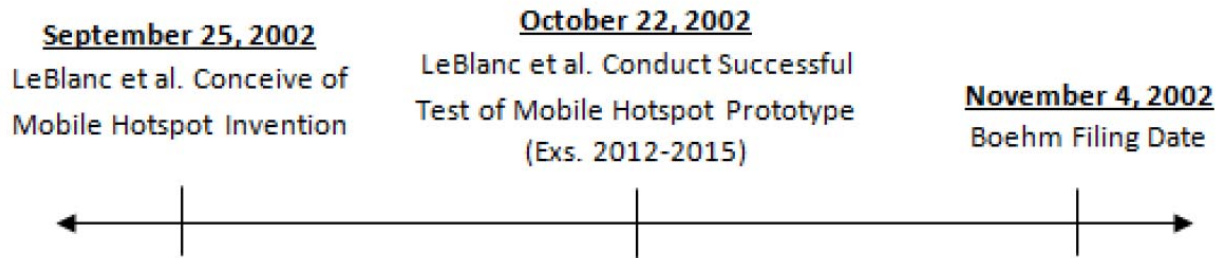
As Claim 1 of the '771 Patent recites in more complete terms, the mobile wireless hotspot system generally includes: (1) a short-range wireless access point to communicate with client devices, (2) a long-range wireless Internet access interface, and (3) a Local Area Network (LAN) routing system that manages the data path between the short-range wireless access point and the long-range wireless Internet access interface. JA60. Further, as recited in the “wherein” clause of Claim 1, the system is a “stand-alone system” in which client devices connected to the hotspot can “access the Internet without the need to access an external service controller server.” JA60.

**B. The Inventors' Pre-Boehm Invention of the Claimed Mobile Wireless Hotspot System**

The inventors conceived the claimed mobile wireless hotspot system before Boehm's November 4, 2002 filing date. The inventors also reduced the invention to practice before Boehm's filing date (or, alternatively, exercised diligence from their earlier conception until their reduction to practice). IV's proof of an earlier invention date included: (1) detailed, unchallenged testimony of Larry LeBlanc, one of the named inventors on the '771 Patent, that the inventors invented their mobile hotspot system before Boehm's filing date, and (2) substantial documentary and photographic evidence corroborating Mr. LeBlanc's testimony.

Mr. LeBlanc testified in great detail about the inventors' conception and reduction to practice of a mobile hotspot system they called the "MHS1," an acronym for Mobile Hotspot System 1. JA1309–42. In 2002, Mr. LeBlanc and his co-inventors, Eddie Ho and Kirk Moir, quit their jobs to start their own business venture directed to this new technology. JA1310–11 ¶¶ 5–7. They conceived the mobile hotspot system and founded a new corporation, In Motion Technology, Inc., on September 3, 2002, to develop the new mobile hotspot system. JA1311 ¶ 7. At that time they were each working full-time to develop the invention. *Id.* ¶ 8. They worked at least five, and often six, days a week, except holidays, to develop the invention. *Id.* Working to reduce to practice their mobile hotspot system was their only employment. *Id.*

The inventors completed a working prototype of the MHS1 by October 22, 2002. JA1320 ¶ 19. On that day, the inventors conducted a successful road test of the MHS1, which confirmed “that it worked for its intended function.” *Id.* The road test occurred prior to Boehm’s filing date of November 4, 2002.



The road test was memorialized in documents, including photographs taken on the day of the road test. *Id.*; JA1363–65. Concerning one photograph, Mr.

LeBlanc testified:

The second photograph shows Eddie and I seated next to the MHS1 prototype, which is installed in the back of Eddie’s minivan. The MHS 1 was installed in the minivan by connecting it to an external antenna and by plugging it into a power inverter. The wire that is visible between Eddie and the laptop computer was for connecting to the antenna for the CDMA2000 1xRTT Internet interface card. The 1xRTT interface card itself is not visible because it plugged in flush with the edge of the laptop computer. However, the Prism2 card which served as the wireless access point is visible extending toward

Eddie from the side of the laptop computer. Unlike the 1xRTT interface card, this card did not plug in flush to the laptop computer because it included a built-in antenna which needed to extend out from the computer housing.

JA1321 ¶ 22. This testimony, which was unchallenged, relates to the digital photograph below (JA1364):



Eddie Ho    MHS1 prototype    Larry Leblanc

Photo taken on October 22, 2002

Metadata of the photograph, created automatically by a computer, shows its last “modified date” was October 22, 2002. JA1320 ¶ 20; JA1366.

Mr. LeBlanc testified that the October 22, 2002 road test established that the MHS1 used that day worked for its intended purpose. Specifically:

During that road test, we confirmed that we were able to wirelessly access the Internet with client devices (having 802.11b functionality) through the MHS1 using a shared Internet connection. For example, we confirmed that user devices could connect via WiFi and obtain an IP address via DHCP implemented locally at the MHS1. Client devices were authenticated by at least a required visit to a welcome page. After this authentication, client devices could access the Internet via the 1xRTT cellular network connection. The MHS1 was required to perform Network Address Translation in order to allow client devices to share the 1xRTT card’s external Internet address. We confirmed that client devices could load Internet webpages and locally-stored pages. We also confirmed that the MHS1 monitored the connection to the Internet and automatically re-connected as necessary.

JA1322 ¶ 24.

Neither Motorola nor the Board challenged the veracity, accuracy, or credibility of Mr. LeBlanc's testimony. Motorola chose not to even cross-examine Mr. LeBlanc. Thus, his testimony that the inventors conceived and reduced to practice the MHS1 before Boehm's filing date remains unchallenged.

**C. The *Inter Partes* Review**

**1. Motorola's Petition**

Motorola filed a petition for *Inter Partes* Review of the '771 Patent on March 10, 2014. JA62, JA125. The Board granted a filing date, but required Motorola to correct formal defects in the petition. JA130–31. Motorola filed a corrected petition on March 25, 2014. JA134, JA199. Hereinafter, references to the "Petition" refer to Motorola's corrected petition filed on March 25, 2014.

Motorola argued that Claims 1–4, 7, and 18 of the '771 Patent are unpatentable. JA140–141, relying on Boehm for *every* proposed ground of unpatentability. JA149, JA154, JA167, JA178, JA184. Boehm is a publication of a patent application filed on November 4, 2002 and published on May 6, 2004. JA777. Motorola alleged that Boehm is so called "secret prior art" (under 35 U.S.C. § 102(e)) based on its filing date a mere four months before the filing of the '771 patent. JA149. By relying on an alleged Section 102(e) reference filed such a short time before the filing date of the '771 Patent, Motorola assumed the significant risk that IV would be able to swear behind the reference.

**2. The Board's Institution Decision**

The Board instituted trial on three grounds, each of which rely on Boehm. JA275.

**3. IV Proved that the Inventors Invented Their Mobile Hotspot System Before Boehm's Filing Date.**

In its Patent Owner Response, IV demonstrated that the inventors named on the '771 patent invented the claimed mobile hotspot system before Boehm's filing date. This swear behind was readily foreseeable, given that Motorola relied on the alleged Section 102(e) Boehm reference for *every* proposed unpatentability ground, and Boehm was barely prior art by only about four months. As explained above, IV's proof of an earlier invention date included the detailed testimony of Mr. LeBlanc, together with substantial documentary and photographic evidence corroborating Mr. LeBlanc's testimony.

**a. Mr. Leblanc's Unchallenged Testimony**

As explained above, Mr. LeBlanc offered detailed testimony that he and his co-inventors invented the claimed mobile hotspot system before Boehm's filing date. JA1309–42. His testimony established that the three inventors **both** conceived every claim limitation of the '771 patent **and** conducted a successful road test demonstrating that the invention worked for its intended purpose. JA1312–26 ¶¶ 12–33. This successful road test, conducted on October 22, 2002,

was an actual reduction to practice of the claimed invention before Boehm's filing date of November 4, 2002. *Id.*

Mr. LeBlanc's testimony was never challenged. Motorola did not cross-examine him. Motorola did not allege that his testimony was inaccurate or not credible. Similarly, the Board did not find that Mr. LeBlanc's testimony was inaccurate or not credible. JA16–19. But neither Motorola nor the Board conducted a legally proper Rule of Reason assessment of the corroborating evidence in view of Mr. LeBlanc's undisputed testimony. *Id.* Instead, the Board, at Motorola's urging, adopted a legally incorrect and impossible-to-meet application of the corroboration requirement that led to the wrong conclusion that Boehm is prior art to the '771 patent. *Id.*

**b. Exhibit 2009 – MHS1 System Requirements**

The MHS1 System Requirements Document, Exhibit 2009, provides details about the MHS1 system conceived and built by the inventors, and it corroborates Mr. LeBlanc's testimony that the conception of the claimed system occurred prior to the October 22, 2002 road test. JA1346–60. Exhibit 2009 describes operational scenarios, functional requirements, and hardware implementations for the MHS1 system. *Id.* It bears a date of September 24, 2002 (JA1346), nearly a month before the inventors' road test of the MHS1 system. The electronic version of Exhibit 2009 is a Microsoft Word file with metadata timestamps created automatically by a

computer running Microsoft Word showing a creation date of September 24, 2002 and a last modified date of September 25, 2002. JA1312–13 ¶ 13; JA1361.

There were very few disputes below about what Exhibit 2009 discloses. With respect to Claim 1, it was undisputed that Exhibit 2009 discloses “[a] mobile wireless hotspot system,” “a short-range, high-speed wireless access point operative to communicate with short-range client devices,” and “a long-range, wireless Internet access interface operative to communicate with the Internet.” JA397–400.

There was also no dispute between the parties that Exhibit 2009 discloses “a Local Area Network (LAN) routing system managing the data path between said wireless access point and said Internet access interface.” *Id.* Motorola presented no evidence or argument that Exhibit 2009 lacks the *LAN routing system* limitation. *Id.* Nevertheless, the Board found, *sua sponte*, that IV failed to corroborate that the MHS1 met the *LAN routing system* limitation because the corroborating evidence allegedly failed to show that the MHS1 performed “authentication” and “control.” JA17–18. But the claimed *LAN routing system* limitation does not require authentication or control under the Board’s claim construction. JA7–10.

Motorola argued below that Exhibit 2009 does not corroborate Mr. LeBlanc’s testimony that the MHS1 system conceived by the inventors included the *stand-alone system* limitation prior to the filing of the Boehm reference.

JA397–400. Specifically, Motorola disputed whether the MHS1 system conceived by the inventors could assign Internet addresses using the Dynamic Host Control Protocol (“DHCP”) *without using an external DHCP server. Id.*

In fact, Mr. LeBlanc testified that the MHS1 that was conceived by the inventors and road tested on October 22, 2002 assigned IP addresses “via DHCP implemented *locally* at the MHS1,” without an external DHCP server. JA1322 ¶ 24 (emphasis added). Exhibit 2009 supports Mr. LeBlanc’s testimony, disclosing that a “DHCP process” was a requirement of the MHS1, with no reference to any external server, nearly a month before the successful road test. JA397–400; JA18–19. The Board nevertheless found that Exhibit 2009 does not, by itself, affirmatively prove that the MHS1 could perform DHCP without an external server. JA18.

**c. Exhibit 2020 – Troubleshooting Guide**

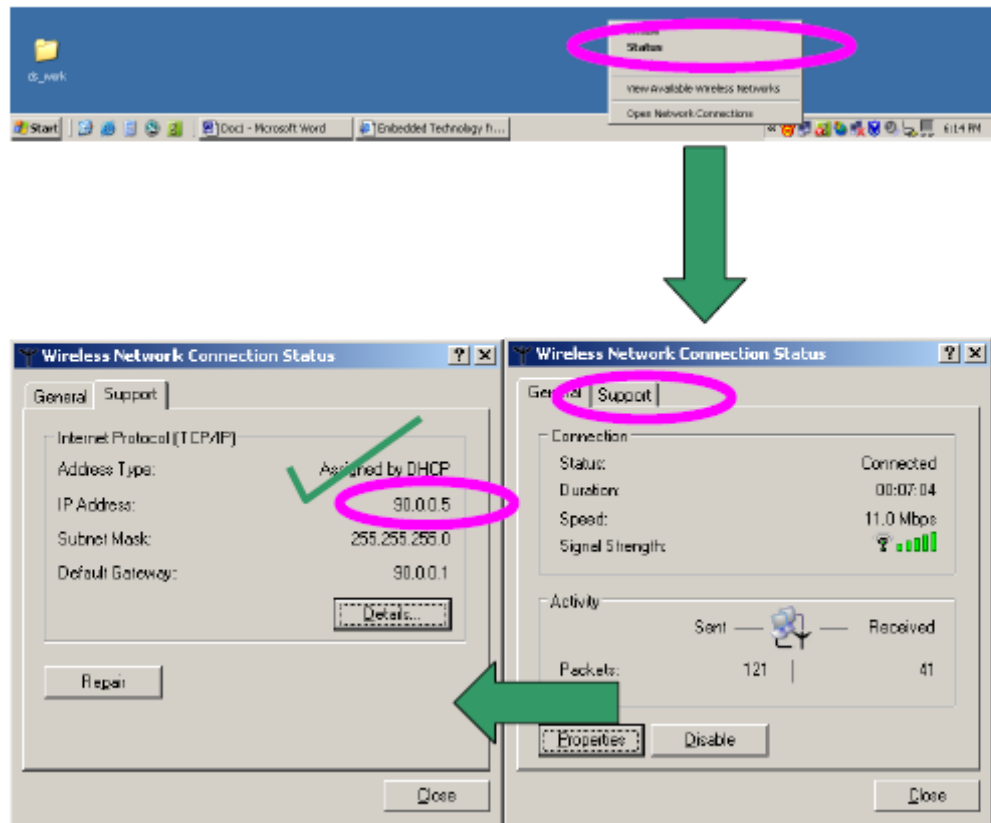
Exhibit 2020 is additional evidence that corroborates Mr. LeBlanc’s testimony that the MHS1 could perform DHCP without an external server. Exhibit 2020, a troubleshooting guide for the MHS1, expressly disclosed that the MHS1 performed DHCP locally. Mr. LeBlanc testified as follows about Exhibit 2020:

Section 2 shows the client device settings that should be used in order to allow the MHS1 to employ DHCP and DNS protocols. Section 3 indicates that the MHS1 assigned a private IP address to each user.

This shows that the MHS1 performed DHCP and network address translation functions.

JA1333 ¶ 49; JA1388–98. A portion of section 3 of Exhibit 2020, referenced in Mr. LeBlanc’s testimony, is shown below:

**3 Did your computer receive an IP address from the Mobile Hotspot? The Mobile Hotspot assigns users private IP addresses in the range 90.0.0.2 – 90.0.0.255.**



JA1393. This section shows that the “Mobile Hotspot” itself—not an external DHCP server—provided IP addresses to client devices using DHCP. *Id.*

In assessing the corroboration of Mr. LeBlanc’s testimony, the Board disregarded Exhibit 2020 in its entirety. The Board did this for the sole

reason that the document is dated about six weeks after Boehm's filing date. JA18–19. As explained below, this was legal error because post-critical date evidence should be examined in a proper Rule of Reason analysis. Indeed, Exhibit 2020 is highly probative of the MHS1 system conceived by the inventors, because it was created by the inventors contemporaneously with the conception and reduction to practice of the invention, and computer metadata shows that it has not been revised since.

**d. Exhibits 2036 & 2037 – Windows 98 Functionality**

Mr. LeBlanc testified that the inventors used tools offered by the Windows 98 operating system to implement features of the invention in the MHS1, including the *LAN routing system* and *stand-alone system* limitations. JA1315–1316. Exhibits 2036 and 2037 corroborate Mr. LeBlanc's testimony by providing information on the functionality of Windows 98. His testimony is further corroborated by Exhibit 2009, which discloses that the MHS1 used the Microsoft Windows 98 operating system. JA1356.

Exhibits 2036 and 2037 are genuine Microsoft documents that corroborate Mr. LeBlanc's testimony that Windows 98 had the functionality that the inventors used to implement the *LAN routing system* and *stand-alone system* limitations within the MHS1. JA1547–51. While these exhibits have "last reviewed" dates in 2007, there is no evidence or credible argument that these genuine Microsoft

documents inaccurately describe Windows 98, a standard and well-known operating system released years before the inventors used it in 2002.

e. **Exhibit 2006 – Dr. Tewfik’s Independent Expert Analysis of Exhibit 2009**

IV introduced testimony of an independent expert witness, Dr. Ahmed Tewfik, who reviewed Exhibit 2009 and testified what it disclosed to a person of ordinary skill in the art in the relevant timeframe. JA1244–51 ¶¶ 31–36. Dr. Tewfik is a professor of Electrical and Computer Engineering at the University of Texas at Austin. JA1413. He received his Ph.D. in Electrical Engineering and Computer Science in 1987 from M.I.T. *Id.* He is well-qualified to testify what Exhibit 2009 disclosed to a person of ordinary skill in the art in the relevant timeframe. After conducting his independent analysis of Exhibit 2009, Dr. Tewfik concluded that “Exhibit 2009 establishes that the inventors of the ’771 patent had conceived of the subject matter described in Claims 1–4, 7, and 18 prior to the November 4, 2002 filing date of the Boehm reference.” JA1250 ¶ 35.

4. **The Board’s Final Written Decision**

In its Final Written Decision, the Board found that Boehm is “prior art to the challenged claims under 35 U.S.C. § 102(e).” JA19. The Board then found every challenged claim unpatentable, either as anticipated by Boehm, or obvious in view of Boehm combined with other references. JA39, JA41–JA42. Every

unpatentability determination relied on the Board's finding that Boehm is prior art.  
*Id.*

#### IV. SUMMARY OF ARGUMENT

A. **The Board Erred By Not Conducting The Requisite Rule Of Reason Analysis In Evaluating The Evidence Of Prior Invention**

This case demonstrates the significant risk that an IPR Petitioner takes when it relies critically on alleged prior art under 35 U.S.C. § 102(e) to challenge an issued patent. The Patent Owner's successful swear-behind of that prior art defeats (or at least should defeat) the Petition in its entirety. Here, the Boehm reference is alleged prior art to the '771 patent under Section 102(e) by only about *four months*. It is not surprising, then, that IV introduced testimony and corroborating evidence to swear behind the Boehm reference. However, rather than conduct a conventional conception and reduction to practice analysis under the Rule of Reason, as the Board has done for decades in the contexts of *ex parte* appeals and patent interferences, in this case the Board imposed stringent new requirements for corroborating inventor testimony that go far beyond well-established jurisprudence. While the momentum to invalidate patents may remain strong, the fundamental rules for swearing behind prior art should not be altered to achieve that result. This is an exceptionally compelling case of prior inventorship, which presents this Court with a unique opportunity to re-level the IPR playing field at least in this regard.

It is critical to appreciate that inventor Larry LeBlanc testified in detail about the inventors' prior conception and reduction to practice of the claimed invention, and *his testimony was entirely unchallenged*. While Motorola had every opportunity to cross-examine Mr. LeBlanc, Motorola chose not to do so. Rather, Motorola successfully, and incorrectly, convinced the Board to essentially ignore Mr. LeBlanc's testimony because he was an inventor, and to require IV to prove earlier invention entirely by *other* non-testimonial evidence. But that is not the law. The key inquiry is to ascertain whether the inventor's testimony of prior invention is, more likely than not, true. The purpose of the other *corroborating* evidence is not to independently prove prior inventorship by itself. Rather, as its name indicates, that other "corroborating" evidence is used to assist in evaluating the likely truth (or falsity) of the primary evidence—namely, the inventor's testimony.

Here, the credibility of Mr. LeBlanc's testimony of prior invention was unchallenged. And the non-inventor corroborating evidence from the time of the conception and reduction to practice is wholly consistent with, and fully supportive of, his testimony. That should have been the end of the inquiry—Mr. LeBlanc was, *at least* more likely than not, telling the truth. However, the Board chose to disregard the inventor's testimony, and to elevate the status of corroborating evidence as essentially the *only* basis of proving prior inventorship. This legal error

presents an inordinately high—and legally improper—burden for any patent owner to meet.

This is not a case in which the Board examined all of the evidence under the well-established Rule of Reason analysis and concluded that IV’s evidence was not credible or entitled to little weight. Rather, the Board simply disregarded evidence by applying legally erroneous categorical rules. For example, the Board ignored:

- Portions of Exhibit 2009 because that MHS1 “system requirements” document does not specifically call out system components—such as an external service controller server—that are *not* required;
- Exhibit 2020 because, while contemporaneous, this MHS1 system “troubleshooting” document was dated a few weeks after the invention date;
- Exhibits 2036 and 2037 because those Microsoft documents describing the Windows 98 operating software used by the MHS1 showed “last reviewed” dates after the invention date; and
- Exhibit 2004 (Dr. Tewfik’s testimony) because a portion of his analysis cited to information provided by Mr. LeBlanc, and was thus not entirely divorced from the inventor’s testimony.

Thus, the Board did not evaluate whether all of the corroborating evidence supported the inventor’s testimony under the Rule of Reason. Instead, by

intentionally and erroneously ignoring key pieces of relevant evidence, the Board concluded that IV failed to corroborate earlier invention.

**B. The Boehm Reference Is Not Prior Art**

The dispositive issue in this appeal is whether the Board correctly determined that Boehm is prior art to the challenged '771 patent under Section 102(e). Every patentability challenge and every finding of unpatentability relied on Boehm. Consequently, if Boehm is not prior art, the Board's judgment of unpatentability should be reversed. Indeed, a vacatur and remand would be unnecessary because a finding of unpatentability on any of the asserted grounds would be unsupportable as a matter of law.

Boehm is not prior art. The Board's legal conclusion that IV did not prove an invention date prior to Boehm's filing date was erroneous. The Board made several legal errors that resulted in a legally incorrect Section 102(e) swear behind analysis under the Rule of Reason. This included disregarding highly probative post-invention date evidence that established that the successful road test of the MHS1 system met the challenged claims. Had the Board conducted a legally correct Rule of Reason analysis and considered all of the relevant evidence, the Board would have concluded that Mr. LeBlanc's testimony (namely, that he and his co-inventors successfully reduced the claimed subject matter to practice before

the filing date of the Boehm reference), together with IV's corroborating evidence, adequately prove prior invention.

The Board nevertheless concluded that IV failed to prove earlier conception of two claim limitations:

- (1) the *LAN routing system* limitation; and
- (2) the *stand-alone system* limitation.

**1. The Inventors' Pre-Boehm MHS1 System Contained A LAN routing system**

The Board's analysis of the *LAN routing system* limitation was legally flawed because the Board's conclusion rested on a finding that IV failed to prove that the inventors' pre-Boehm MHS1 lacked authentication or control functions, which are *not* required under the Board's own adopted claim construction. Indeed, IV originally proposed that the *LAN routing system* limitation requires authentication and control functions as described in the specification, but the Board disagreed. The Board construed the *LAN routing system* limitation broadly, to require "managing the data path between a wireless access point and an Internet access interface," and noted that "managing" is not defined, concluding that authentication or control functions are not required.

Despite this broad construction for the *LAN routing system* limitation, the Board applied a narrower, more demanding claim construction when assessing IV's corroboration evidence, concluding that IV failed to corroborate that the

MHS1 had authentication or control functions. This was legal error because the Board's corroboration analysis applied the wrong claim construction.

When all of the relevant evidence is considered under the Rule of Reason and the correct claim construction is applied, IV clearly established that the inventors conceived of and actually reduced to practice an MHS1 system that met the *LAN routing system* limitation. The requirements document for the MHS1, for example, corroborated Mr. LeBlanc's testimony that the MHS1 implemented a mandatory sign-on process that a user had to complete to gain access to the Internet. The MHS1 thus acted as a gateway to determine whether the user would be granted or denied Internet access. Additional evidence corroborates Mr. LeBlanc's testimony that the MHS1 met the *LAN routing system* limitation using functionality within the Windows 98 operating system.

**2. The Inventors' Pre-Boehm MHS1 System Was A Stand-Alone System**

The Board's analysis of the *stand-alone system* limitation was also legally flawed. The Board did not conduct a proper Rule of Reason analysis of all of the evidence to determine whether Mr. LeBlanc's testimony, together with the corroborating evidence, proved prior invention by a preponderance of the evidence. Instead, the Board categorically disregarded corroborating evidence, such as contemporaneous post-critical date evidence, that it should have considered under the Rule of Reason. If the Board had examined all pertinent evidence under

the Rule of Reason—as it was legally required to do—it would have concluded that IV established that the MHS1 was “capable of operating independently of any other system,” and, thus, that it was a stand-alone system.

The dispute regarding this limitation centered on whether the MHS1 could perform local DHCP without requiring an external DHCP server. The corroborating evidence shows that the MHS1 had local DHCP capability. However, the Board reached a contrary conclusion, not by conducting a reasoned examination of all of the evidence, but by categorically disregarding key evidence. The Board disregarded the evidence that the “MHS1 System Requirements Document,” which listed all the system requirements of the MHS1, did not list an *external* DHCP server as a requirement. The Board also categorically disregarded contemporaneous post-critical date corroborating evidence simply because it is post-critical date, rather than conducting a full examination of the evidence. The post-critical date evidence expressly states that the MHS1 performed local DHCP and shows that the Windows 98 operating system used by the MHS1 during the road test had local DHCP capability, thereby further corroborating Mr. LeBlanc’s testimony that the MHS1 was a stand-alone system.

Because the Board’s conclusion that Boehm is prior art rests on an incorrect legal analysis, and because the Board necessarily should have reached the opposite conclusion under the correct Rule of Reason legal analysis, the Board’s finding

that Boehm is prior art should be reversed. Further, because the Board's judgment of unpatentability relies on Boehm for every challenged claim, the judgment of unpatentability should be reversed.

## **V. ARGUMENT**

### **A. Standard of review**

"Conception is a question of law based on underlying factual findings."

*Spansion v. ITC*, 629 F.3d 1331, 1356 (Fed. Cir. 2010). Thus, the Board's legal conclusions with respect to conception are reviewed *de novo*, while its factual findings are reviewed for substantial evidence. *Id.*

### **B. The law of prior invention and corroboration**

To prove invention prior to Boehm's filing date, IV must show:

(1) the inventors of the '771 Patent conceived the invention before Boehm's filing date, and

*Either*

(2) the invention was reduced to practice before Boehm's filing date, *or*

(3) reasonable diligence was exercised from a time just before Boehm's filing date until the invention was reduced to practice after Boehm's filing date.

*See, e.g., Mahurkar v. C.R. Bard, Inc.*, 79 F.3d 1572, 1577 (Fed. Cir. 1996). There is no need to show diligence if both conception and reduction to practice occurred before Boehm's filing date. *Id.*

The Board found that IV did not sufficiently corroborate prior conception of the invention. JA16–19. The Board did not make an independent finding—separate from the finding of insufficient corroboration of conception—that IV’s evidence failed to show reduction to practice. *Id.* Further, the Board did not address diligence. *Id.* Therefore, this appeal focuses on conception. However, IV’s evidence also shows reduction to practice before the critical date (or, alternatively, conception before the critical date coupled with diligence until reduction to practice), and the Board did not find otherwise. Thus, the Board’s finding of insufficient corroboration of conception should be reversed, as should the conclusion that Boehm is prior art to the ’771 Patent.

“Conception is ‘the formation in the mind of the inventor of a definite and permanent idea of the complete and operative invention, as it is therefore to be applied in practice.’” *Solvay S.A. v. Honeywell Int’l, Inc.*, 622 F.3d 1367, 1377 (Fed. Cir. 2010) (quoting *Townsend v. Smith*, 36 F.2d 292, 295 (C.C.P.A. 1930)). For an idea to be sufficiently definite, the inventor must have a “specific, settled idea, a particular solution to the problem at hand, not just a general goal or research plan he hopes to pursue.” *Burroughs Wellcome Co. v. Barr Labs., Inc.*, 40 F.3d 1223, 1228 (Fed. Cir. 1994). But “conception does not require perfection.” *Spansion*, 629 F.3d at 1356. Rather, “conception is complete when ‘the idea is so clearly defined in the inventor’s mind that only ordinary skill would be necessary

to reduce the invention to practice, without extensive research or experimentation.”

*Id.* (quoting *Burroughs*, 40 F.3d at 1228).

An inventor’s testimony by itself is insufficient to prove conception. *Price v. Symsek*, 988 F.2d 1187, 1194 (Fed. Cir. 1993). Thus, “some form of corroboration must be shown.” *Id.* The corroboration may be a “disclosure to others” of the invention or an “embodiment of the invention in some clearly perceptible form, such as drawings or model, with sufficient proof of identity in point of time.” *Id.* The purpose of the corroboration rule is to prevent a party from establishing earlier invention by relying on “perjury,” fraud, or inventor testimony that is otherwise not credible. *Id.* This Court has observed that “corroboration is fundamentally about ‘credibility.’” *Fleming v. Escort Inc.*, 774 F.3d 1371, 1377 (Fed. Cir. 2014) (citing *Medichem, S.A. v. Rolabo, S.L.*, 437 F.3d 1157, 1171 (Fed. Cir. 2006)); *see also Brown v. Barbacid*, 276 F.3d 1327, 1343 (Fed. Cir. 2002) (Newman, dissenting) (“The purpose of the corroboration requirement is to probe the veracity of the inventor’s assertions by determining, on the entirety of the testimonial and documentary record, whether it is more likely than not that the asserted activities and events occurred.”)

“There is no single formula that must be followed in proving corroboration.” *Price*, 988 F.2d at 1195 (citing *Berry v. Webb*, 412 F.2d 261, 266 (C.C.P.A. 1969)). Rather, corroborating evidence “is evaluated under ‘the rule of reason,’

whereby ‘all pertinent evidence is examined in order to determine whether the inventor’s story is credible.’” *Fleming*, 774 F.3d at 1377 (citing *Sandt Tech., Ltd. v. Resco Metal & Plastics Corp.*, 264 F.3d 1344, 1350 (Fed. Cir. 2001)). This Court has explained that documentary or physical evidence is the best corroborating evidence:

Documentary or physical evidence that is made contemporaneously with the inventive process provides the most reliable proof that the inventor’s testimony has been corroborated. *See Woodland Tr. v. Flowertree Nursery, Inc.*, 148 F.3d 1368, 1373, 47 U.S.P.Q.2d 1363, 1367 (Fed. Cir. 1998). Because documentary or physical evidence is created at the time of conception or reduction to practice, the risk of litigation-inspired fabrication or exaggeration is eliminated. *Sandt*, 264 F.3d at 1351.

Furthermore, the content of documentary evidence does not need to be corroborated. *Price*, 988 F.2d at 1195. Rather, such evidence:

is before the board for the board to make its own determinations as to what [the] evidence discloses. Unlike a situation where an inventor is proffering oral testimony attempting to remember specifically what was conceived and when it was conceived, a situation where, over time, honest witnesses can convince themselves that they conceived

the invention of a valuable patent, *Eibel Process [v. Minn. & Ont. Paper Co.]*, 261 U.S. [45,] 60, 43 S. Ct. [322,] 327 (1923),

“corroboration” is not necessary to establish what a physical exhibit before the board includes. Only the inventor’s testimony requires corroboration before it can be considered.

*Id.*

Likewise, “no similar condition of ‘corroboration’ is imposed on an inventor’s notebook, or indeed on any documentary or physical evidence, as a condition for its serving as evidence of a reduction to practice.” *Medichem*, 437 F.3d at 1170.

While the Court recognizes that the credibility of witnesses can vary, “a notebook, unlike the oral testimony of an inventor, may be weighed, for whatever it is worth, in the final determination of reduction to practice. . . . Once properly admitted into evidence, documentary and physical evidence is assigned probative value and collectively weighed to determine whether reduction to practice has been achieved.” *Id.* Accordingly, the law does not support a categorical exclusion of documentary evidence created by an inventor.

Nor does the law “impose an impossible standard of independence on corroborative evidence by requiring that every point of a reduction to practice be corroborated by evidence having a source totally independent of the inventor; indeed, such a standard is the antithesis of the rule of reason.” *Fleming*, 774 F.3d at

1377 (citing *Cooper v. Goldfarb*, 154 F.3d 1321, 1331 (Fed. Cir. 1998)).

Documentary evidence created by an inventor should be given weight when there is independent evidence of its credibility.

Further, corroborating evidence need not directly prove conception or reduction to practice of every claim limitation. Corroborating evidence may be sufficient even when it does not definitively prove the inventor's testimony or disclose "each claim limitation as written." *Fleming*, 774 F.3d at 1377. "It is a flexible, rule-of-reason demand for independent evidence that, as a whole, makes credible the testimony of the purported prior inventor with regard to conception and reduction to practice of the invention as claimed." *Id.* Likewise, "[c]ircumstantial evidence about the inventive process, alone, may also corroborate." *Sandt*, 264 F.3d at 1351.

This Court recently reaffirmed that the Rule of Reason is a holistic analysis of the corroborating evidence "taken as a whole," and, thus, it is legal error to focus on whether a single detail of the inventor's testimony "is independently evidenced." *Transweb, LLC v. 3M Innovative Props.*, App. No. 2014-1646, slip op. at 8 (Feb. 10, 2016) (citing *Fleming*, 774 F.3d at 1377; *Ohio Willow Wood v. Alps S., LLC*, 735 F.3d 1333, 1348 (Fed. Cir. 2013)). The Court stated that it has "repeatedly rejected an element-wise attack on corroboration of oral testimony." *Id.*

In addition, post-critical date evidence should be assessed, along with other corroborating evidence, under the rule of reason. Indeed, “corroboration does not require that every detail of the testimony be independently and conclusively supported by explicit *disclosures in the pre-critical data documents* or physical exhibits.” *Ohio Willow Wood*, 735 F.3d at 1348 (emphasis added). This Court has held time and time again that under “a ‘rule of reason’ approach, [it] view[s] the totality of the evidence pertinent to the testimony, including circumstantial evidence, in order to ascertain whether the testimonial assertions are credible.” *Id.* Indeed, “evidence of corroboration can take many forms and such evidence does not become irrelevant to the credibility determination simply because a patentee questions whether it was created shortly after the critical date.” *Id.*

Ultimately, in view of the foregoing principles, corroboration under the rule of reason is not conducive to categorical reasons to ignore evidence. Instead, “[i]n the final analysis, each corroboration case must be decided on its own facts with a view to deciding whether the evidence as a whole is persuasive.” *Cooper*, 154 F.3d at 1331.

C. **The Board’s determination that IV did not show prior conception of the *LAN routing system* limitation is legally erroneous.**

1. **The Board applied an incorrect claim construction that required IV to corroborate that the MHS1 had authentication or control functions that are not required under the Board’s claim construction.**

The Board found that IV failed to corroborate prior conception of the *LAN routing system* limitation. JA16–18. Specifically, the Board found that IV’s corroborating evidence made “no mention of providing *authentication* or any other type of *control*.” JA18 (emphasis added). The Board’s finding is legally erroneous because it is based on an incorrect, unduly narrow claim construction that requires the *LAN routing system* limitation to provide authentication or control. Under the proper claim construction, which requires neither authentication nor control, there is ample evidence in the record that the inventors’ MHS1 system satisfied the claim limitation.

The parties disputed the meaning of the *LAN routing system* limitation, and the Board addressed the claim construction dispute in its Decision. Patent Owner argued that “managing the data path” means “*controlling* the client devices’ access to the Internet, things like *authentication*, and *controlling access* to client devices from the Internet, like sharing a single Internet address.” JA8–9 (emphasis added). The Board rejected Patent Owner’s argument, explaining that the specification “does not describe ‘managing the data path’ explicitly” and stating that it was not

persuaded that the claim language “includes the *authentication* and sharing functions described in the cited passages.” JA8 (emphasis added). The Board viewed Patent Owner’s position that “managing the data path” requires authentication or controlling access as an improper attempt “to improperly read limitations from the Specification into the claim.” JA9. Ultimately, the Board construed the *LAN routing system* limitation to mean “a system that directs data between a local area network and the Internet by managing the data path between a wireless access point and an Internet access interface,” with no requirement of authentication or controlling of access. JA9–10.

When performing its invalidity analysis, the Board applied this broad construction. For example, the Board reviewed the prior art Mitchell patent and found that it met the *LAN routing system* limitation without requiring authentication or controlling of access. Specifically, the Board found that the limitation was met by Mitchell’s disclosure of an aircraft server 271 that “distributes Internet service,” “directs data between a local area network and the Internet,” and “assigns client addresses to client computer 252 and identifies absent or corrupt files in the delivered Internet information.” JA25–26. That finding shows that the *LAN routing system* limitation, as construed by the Board, requires neither authentication nor controlling of access.

In stark contrast to its invalidity analysis, the Board applied a wholly different, more demanding claim construction of the *LAN routing system* limitation when evaluating IV's evidence of corroboration. Applying a clear double standard, the Board required IV to provide corroboration that the MHS1 system conceived by the inventors had authentication and control functions. To this point, the Board found IV's evidence of corroboration insufficient because it made "no mention of providing *authentication* or any other type of *control*." (JA18 (emphasis added).) It was legal error for the Board to apply different claim constructions when assessing invalidity and corroboration, and its finding of insufficient corroboration of the *LAN routing system* limitation under a more demanding claim construction was erroneous. Indeed, that finding by the Board is simply irrelevant based on its own claim construction.

As explained below, ample evidence demonstrates that the MHS1 satisfied the *LAN routing system* limitation under the Board's broad construction of the limitation.

**2. The Board improperly discounted unchallenged inventor testimony that the MHS1 managed the data path.**

The Board improperly discounted unchallenged testimony of Mr. LeBlanc that the MHS1 system satisfied the *LAN routing system* limitation. While inventor testimony requires corroboration, this does not mean that inventor testimony is to be ignored. Indeed, inventor testimony is normally the *primary* evidence of earlier

conception. Corroborating evidence is sufficient, under the Rule of Reason, if it shows that the inventor's testimony is credible. *Fleming*, 774 F.3d at 1377 (citing *Sandt*, 264 F.3d at 1350). Independent documentary evidence that alone establishes the earlier conception of every claim limitation is not required. *See, e.g., Sandt*, 264 F.3d at 1351.

Here, Mr. LeBlanc offered unchallenged testimony that the MHS1 system had a LAN routing system, as required by the claims. JA1315–16, JA1320 ¶ 19, JA1322 ¶ 24. Mr. LeBlanc testified that the inventors conducted a road test of the MHS1 system on October 22, 2012. JA1320 ¶ 19. He testified that the road test confirmed, among other things, that the MHS1 system's LAN routing system worked:

Client devices were authenticated by at least a required visit to a welcome page. After this authentication, client devices could access the Internet via the 1xRTT cellular network connection. The MHS1 was required to perform Network Address Translation in order to allow client devices to share the 1xRTT card's external Internet address. We confirmed that client devices could load Internet webpages and locally-stored pages. We also confirmed that the MHS1 monitored the connection to the Internet and automatically re-connected as necessary.

JA1322 ¶ 24. Mr. LeBlanc further testified that a support ticket related to the welcome page involved in authentication was opened on October 15, 2002, further corroborating Mr. LeBlanc's testimony. JA1324–25 ¶ 29.

The Board's decision ignored this testimony that the inventors observed that the LAN routing system of the MHS1 worked in an actual road test. JA16–18. The Board instead focused on Mr. LeBlanc's relatively less significant testimony that the MHS1 used Windows 98. JA16-17. The Board found that "Patent Owner has not established sufficiently that the version of Windows 98 used in the MHS1 included the stated functions" and discounted, for alleged lack of corroboration, Mr. LeBlanc's testimony "that Windows 98 included such functions . . . ." JA16–17. But there is no evidence of record that *any* version of Windows 98 lacked the necessary functions.

The Board, at a minimum, misunderstood Mr. LeBlanc's testimony. Mr. LeBlanc did not testify that the inventors realized after-the-fact that the MHS1 had a LAN routing system because it used Windows 98. Mr. LeBlanc testified that the inventors *knew* that the MHS1 had a LAN routing system because they personally observed the LAN routing system work in an actual road test. JA1320 ¶ 19, JA1322 ¶ 24. Thus, the Board's interpretation that the inventors did not appreciate in 2002 that the MHS1 had a LAN routing system is unfounded and directly contradicted by the evidence. The Board erred by discounting Mr. LeBlanc's

relatively minor Windows 98 testimony while ignoring the more fundamental testimony that the inventors saw the MHS1's LAN routing system work in a road test.

Notably, Motorola did not challenge Mr. LeBlanc's testimony that the MHS1 had a LAN routing system. JA397–400 (arguing lack of corroboration of only the *stand-alone system* limitation). Rather, the Board alleged in its Final Written Decision—without any argument from Motorola—that the documentary evidence does not corroborate Mr. LeBlanc's testimony regarding the *LAN routing system* limitation. JA16–18. While the law requires corroboration, it does not require independent evidence that *proves*, by itself, that the MHS1 had every limitation of the claims. *See, e.g., Sandt*, 264 F.3d at 1351. The correct test is whether the corroborating evidence shows, under the Rule of Reason, that Mr. LeBlanc's testimony is credible. *Fleming*, 774 F.3d at 1377 (citing *Sandt*, 264 F.3d at 1350). The evidence clearly meets that test.

Incidentally, Mr. LeBlanc's testimony refers to the MHS1 performing “authentication” because he was attempting to show that the MHS1 met the *LAN routing system* limitation under IV's proposed claim construction that the limitation requires authentication. That testimony ultimately became unnecessary and irrelevant under the Board's claim construction because the *LAN routing system* limitation, as construed by the Board, does not require authentication. JA7–

10. Whether Mr. LeBlanc’s testimony or the corroborating evidence shows that the MHS1 performed authentication is, therefore, irrelevant to this appeal. The relevant question is whether the evidence shows that the MHS1 “manag[ed] the data path between a wireless access point and an Internet access interface” under the Board’s broader construction. As explained below, the evidence demonstrates this feature.

### **3. The Board improperly discounted Exhibit 2009.**

Exhibit 2009, the “MHS1 System Requirements Document,” sets forth the system *requirements* of the MHS1 system. The Board erred by ignoring important portions of this document. The Board’s characterization that Exhibit 2009 “merely describes displaying a welcome page; there is no mention of providing authentication or any other type of control” (JA17–18) is an oversimplified and erroneous interpretation of the document. Moreover, as explained above, even if the Board’s assertion that “there is no mention of providing authentication or any other type of control” (JA18) were accurate—which it is not—the assertion is irrelevant because the Board construed the *LAN routing system* limitation to not require authentication or control functions. JA7–10.

Under any reasonable interpretation, Exhibit 2009 shows that the MHS1 included a LAN routing system that “directs data between a local area network and the Internet by managing the data path between a wireless access point and an

Internet access interface.” JA25. As indicated above, Motorola did not argue that the MHS1 lacked a LAN routing system under this construction. JA397–400. Moreover, the Board’s *sua sponte* finding that the MHS1 lacked this limitation is contradicted by the evidence and is entirely unsupportable.

When assessing Exhibit 2009, the Board applied an unduly narrow meaning for “managing the data path.” JA17–18. Applying the broadest reasonable interpretation standard, the Board found that the claim limitation refers broadly to a system “that directs data between a local area network and the Internet” by managing the data path between a wireless access point and an Internet access interface.” JA9–10. The Board did not find that IV failed to corroborate that the MHS1 “direct[ed] data between a local area network and the Internet.” JA17–18. Nor did the Board find that IV failed to corroborate that the MHS1 had “a wireless access point and an Internet access interface.” *Id.* The Board’s finding rests entirely on the incorrect conclusion that IV did not corroborate that the MHS1 “manag[ed] the data path” between the wireless access point and the Internet access interface. *Id.*

In fact, Exhibit 2009 corroborates Mr. LeBlanc’s testimony that the MHS1 managed the data path. Section 2.3.4 of Exhibit 2009 describes a “sign-on” process for allowing a user of a client device (referred to as a “Use Laptop or PDA”) to connect to the Internet, using “802.11b compatible interface,” through the MHS1.

JA1355. In the first step of the process, the user turns on the client laptop or PDA and notices that a mobile access point (referred to as “AP” or “Mobile APx”) is available. *Id.* In the second step, the user “selects to connect to” the mobile access point. *Id.* In the third step, an “association and DHCP process is complete[d],” after which the “user will have Internet access.” *Id.* In the fourth step, “the welcome page from MHS1 is displayed” and “the user can start browsing the Internet or start any other Internet related applications.” *Id.*

The first four steps show that the MHS1 acts as a gateway that either allows or prevents Internet access. These undisputed facts corroborate Mr. LeBlanc’s testimony that the MHS1 met the claim requirement of “managing the data path between a wireless access point and an Internet access interface.”

The Board erroneously disregarded Exhibit 2009’s disclosure of the MHS1’s sign-on process—which acts as a gateway to either allow or prevent Internet access—as corroboration that the inventors conceived a LAN routing system for “managing the data path between a wireless access point and an Internet access interface.” The Board further erred by requiring corroboration of an additional function (*viz.*, authentication), which is not part of the *LAN routing system* limitation under the Board’s construction. JA7–10, JA17–18.

The Board’s finding that Exhibit 2009 fails to corroborate the unclaimed “authentication” function is also erroneous. A computer user confronted with a

sign-on process that determines whether the user can access the Internet would understand the process to be an authentication process. Indeed, the fifth step of the sign-on process of Section 2.3.4 of Exhibit 2009 states that there “is no *extra* authentication or encryption provided in MHS1. User needs to rely on other existing security methods (e.g. VPN, SSL) if data security is required.” JA1355 (emphasis added). The statement that no *extra* authentication is provided—for “data security” of transmissions after the sign-on process is complete—indicates that steps one through four include some form of authentication to determine whether to grant the user Internet access. The Board erred by disregarding this evidence that the MHS1 performed authentication.

**4. The Board improperly discounted IV’s corroborating evidence that Windows 98 had the functionality needed to allow the MHS1 to serve as a LAN routing system.**

IV provided additional corroboration, through documents and the testimony of an expert witness, Dr. Tewfik, that Microsoft Windows 98 had the functionality that Mr. LeBlanc testified allowed the MHS1 to serve as a LAN routing system. This evidence further corroborates Mr. LeBlanc’s testimony that the MHS1 had a LAN routing system.

The Board misinterpreted IV’s reliance on the Windows 98 evidence. The Windows 98 evidence is not IV’s primary evidence that the MHS1 had a LAN routing system. Nor does IV rely on the Windows 98 evidence to argue that a LAN

routing system was inherent in the MHS1. Rather, IV's primary evidence is Mr. LeBlanc's testimony that he personally conducted a road test that established that the MHS1 had a working LAN routing system. JA1320 ¶ 19, JA1322 ¶ 24.

IV relies on the Windows 98 evidence to corroborate Mr. LeBlanc's testimony by showing that Windows 98 had the LAN routing system functionality that Mr. LeBlanc testified was present in the MHS1 system. This evidence supports the credibility of Mr. LeBlanc's testimony, because it provides an independent basis—separate from and additional to Mr. LeBlanc's testimony, supporting that the LAN routing system functionality was present in the MHS1 system that was road tested on October 22, 2002 .

The Board discounted the Windows 98 evidence in two ways. First, the Board found that "Patent Owner has not established sufficiently that the version of Windows 98 used in the MHS1 included the stated functions." JA16. This finding is not supported by substantial evidence. Dr. Tewfik testified, based on his *personal experience* in the "late '90s," that Windows 98 had LAN routing system functionality. JA1046–1047. As explained in more detail below, the Board incorrectly found that Dr. Tewfik's testimony was "based on information provided by Mr. LeBlanc." JA17.

Two Microsoft technical documents—submitted in the IPR as Exhibits 2036 and 2037—show that Windows 98 had LAN routing system functionality.

JA1547–51. The Board gave these exhibits “little or no weight” because “they were ‘last reviewed’ in 2007.” JA19. It was legal error to categorically exclude this corroborating evidence simply because it bears a post-conception “reviewed” date. *Ohio Willow*, 735 F.3d at 1348 (Fed. Cir. 2013) (finding that post-critical date evidence was relevant corroborating evidence under the rule of reason). The “reviewed” date of the exhibits does not show that these official Microsoft documents do not accurately enumerate the features of the Windows 98 operating system, and there was no credible evidence that Microsoft added LAN routing system functionality to its Windows 98 operating system years after its release.

The evidence of record wholly supports Mr. LeBlanc’s testimony that Windows 98 had LAN routing system functionality. Importantly, because Windows 98 was a widely distributed and well-documented operating system, Motorola easily could have submitted contrary evidence—that is, evidence showing that Windows 98 lacked LAN routing system functionality—if such evidence existed. Yet Motorola did not submit any such evidence, and the Board did not cite to any such evidence. IV marshalled extensive evidence that Windows 98 had LAN routing system functionality, and the Board’s disregarding of this evidence was legal error.

Second, the Board improperly discounted the Windows 98 evidence by finding that “Patent Owner does not present sufficient evidence that the inventors

knew of and intended to use these functions at the time of the alleged conception.” JA17. In other words, the Board found that the inventors did not appreciate, at the time of conception, that the MHS1 had a LAN routing system. But, as explained more fully in Part V(E), below, the Board’s invocation of the “appreciation doctrine” is unwarranted here. The networking features of Windows 98 would have been familiar to persons of ordinary skill in the art of computer networking in October 2002, and they were familiar to the inventors of the ’771 Patent.

**5. The Board improperly disregarded independent testimony based on Dr. Tewfik’s expertise and personal knowledge.**

Mr. LeBlanc’s testimony was also corroborated by testimony of IV’s expert, Dr. Tewfik. The Board disregarded Dr. Tewfik’s testimony because it allegedly “does not provide sufficient corroboration because it is based on information provided by Mr. LeBlanc rather than Dr. Tewfik’s independent analysis.” JA17. This finding is not supported by substantial evidence. Dr. Tewfik provided two types of corroborating testimony that were not based solely on information provided by Mr. LeBlanc.

First, Dr. Tewfik provided expert testimony that Exhibit 2009 supports Mr. LeBlanc’s testimony that the inventors conceived the claimed invention before Boehm’s filing date. After conducting his expert analysis, Dr. Tewfik testified:

I have been presented with evidence which I agree shows that the inventors of the ’771 patent had conceived of the invention prior to

November 4, 2002. The evidence is Exhibit 2009, which is a document entitled “MHS1 System Requirements Document.”

JA1245 ¶ 33. Dr. Tewfik indicated that he was provided with the claim chart that outlines “[Mr.] LeBlanc’s explanations as to how Exhibit 2009 shows a definite and complete understanding” of the claimed invention of the ’771 Patent. *Id.* ¶ 34.

Dr. Tewfik concludes:

I agree with Larry LeBlanc’s explanations in the foregoing claim chart. In my opinion, Exhibit 2009 establishes that the inventors of the ’771 patent had conceived of the subject matter described in Claims 1-4, 7, and 18 prior to the November 4, 2002 filing date of the Boehm reference.

JA1250 ¶ 35. This expert testimony provides an independent opinion, of a person with extensive expertise in the field of the invention, that Exhibit 2009 corroborates Mr. LeBlanc’s testimony of earlier conception. While Dr. Tewfik necessarily reviewed the claim chart in Mr. LeBlanc’s declaration to perform this analysis, Dr. Tewfik’s opinion about what Exhibit 2009 discloses is based upon his own expertise and knowledge of the relevant field.

The Board’s finding that Dr. Tewfik’s testimony is based solely “on information provided by Mr. LeBlanc” rests on a portion of Dr. Tewfik’s deposition testimony in which he reiterated his direct testimony that his analysis of

IV's corroborating evidence involved comparing the claim chart in Mr. LeBlanc's declaration with the corroborating "specification documents" to "check and see if what was provided in the chart matches what was in the specification documents . . . ." JA17 (citing JA1044 at 10:1–14). In other words, Dr. Tewfik reviewed the evidence himself, with the benefit of his expertise in the field, to reach his own conclusion that Exhibit 2009 corroborates Mr. LeBlanc's testimony of earlier conception. That Dr. Tewfik confirmed his direct testimony that he analyzed the evidence that Mr. LeBlanc believes corroborates earlier conception does not suggest that Dr. Tewfik merely accepted Mr. LeBlanc's assertions without performing his own independent expert analysis. Indeed, Dr. Tewfik's testimony establishes that he conducted an independent expert analysis and concluded that Exhibit 2009 corroborates Mr. LeBlanc's testimony. Nonetheless, the Board erroneously ignored the entirety of Dr. Tewfik's testimony.

Second, Dr. Tewfik testified, based on his personal knowledge, about the functionality of the hardware components and Windows 98 operating system that allowed the MHS1 to serve as a LAN routing system. Dr. Tewfik testified on cross examination that the "Prism2 based interface card" referenced in Exhibit 2009 "refers to a card that you could plug into a laptop and provided you with 802.11 functionality." JA1044–45 at 10:19–11:2. Dr. Tewfik had personal knowledge that the Prism2 provided "802.11 functionality because [he] used such a card back in

the late '90s.” JA1045 at 11:3–7. He also testified about the functionality of the “Sierra Wireless 555 Aircard” referenced in Exhibit 2009, though he did not use that card in the 1990s. JA1045-46 at 11:14–12:8. Dr. Tewfik further testified from personal knowledge that Windows 98 could share Internet connections and, thus, manage a connection between a short-range wireless system and a long-range cellular connection:

And then you had a function which was embedded in the *Windows 98 system, which I also had a chance to use back in the late '90s*, which allowed for sharing of internet connections. . . .

So Windows, the functionality in *Windows 98* is what *managed the connection* between the WiFi short-range wireless system and the long range cellular data connection.

JA1046–47 at 12:21–13:11 (emphasis added).

Dr. Tewfik thus testified, based on his personal knowledge, that the components of the MHS1 had the functionality needed to provide a LAN routing system. This fact testimony, based on Dr. Tewfik’s independent personal knowledge, corroborates Mr. LeBlanc’s testimony that the MHS1 had a LAN routing system that was implemented, in part, using the functionality of the Windows 98 operating system. Yet the Board disregarded this fact testimony from

Dr. Tewfik's based on the incorrect finding that Dr. Tewfik's testimony was wholly based on information provided to him by Mr. LeBlanc. JA17.

**D. The Board erred, as a matter of law, by failing to examine all pertinent evidence corroborating earlier invention of the *stand-alone system* limitation.**

Corroborating evidence must be “evaluated under ‘the rule of reason,’ whereby ‘*all* pertinent evidence is examined in order to determine whether the inventor’s story is credible.’” *Fleming*, 774 F.3d at 1377 (citing *Sandt Tech.*, 264 F.3d 1344 at 1350). It is legal error to ignore pertinent evidence. But the Board reached its finding that IV failed to corroborate earlier invention of the *stand-alone system* limitation by ignoring key pieces of pertinent evidence. This is not a case in which the Board examined all the evidence and made a reasoned analysis that IV’s evidence was not credible or entitled to little weight. It is a case in which the Board simply ignored evidence that undermined the Board’s conclusion.

**1. The Board ignored pertinent evidence that Exhibit 2009 lists the system requirements of the MHS1.**

Exhibit 2009 is entitled “MHS1 System Requirements Document.” Exhibit 2009 expressly discloses that the document lists the *requirements* of the MHS1:

This document specifies high-level *requirements* for the *first* release of MHS. *This release of the produce it referred to as MHS1. . . .*

This document *specifies MHS* in terms of operational scenarios, and functional *requirements*. The primary focus is on *MHS1 requirements*.

JA1352 (emphasis in bold and italics added; emphasis in italics only in original).

Exhibit 2009 further states one of its objectives is “[t]o define *system requirements of MHS1* as the start of the engineering process.” *Id.* (emphasis added).

The fact that Exhibit 2009 lists the system requirements of the MHS1 is key and pertinent evidence. That fact provides essential context to understand what Exhibit 2009 discloses. If Exhibit 2009 does not mention a particular component, it means that the omitted component is *not* a requirement of the MHS1.

Exhibit 2009 lists a “DHCP process” as a requirement of the MHS1. JA1355. It does not list an *external* DHCP server as a requirement. *Id.* Therefore, a person of ordinary skill in the art would understand that from Exhibit 2009 that an external DHCP was *not* a requirement of MHS1. A person of ordinary skill in the art would likewise understand from Exhibit 2009 that the MHS1 could perform local DHCP, that is, perform DHCP without reliance on an external server.

The Board ignored the key evidence that Exhibit 2009 lists the system requirements of the MHS1, and its opinion fails to even acknowledge this evidence. JA18. The Board’s disregarding of this key evidence allowed it to conclude that “the fact that Exhibit 2009 does not discuss an external DHCP server

does not establish affirmatively that the MHS1 as described in Exhibit 2009 did not need to access an external service controller.” *Id.*

The Board’s conclusion is flawed because it erroneously ignored pertinent evidence in evaluating corroboration. If the Board had examined all pertinent evidence—rather than ignoring the evidence that Exhibit 2009 lists the system requirements of the MHS1—the Board would not have concluded that Exhibit 2009 does not establish that the MHS1 did not require an external DHCP server. Indeed, the MHS1 *requirements* document would have listed an external DHCP server as a *requirement* of the system if the MHS1 required one.

A detailed review of Exhibit 2009 shows that a “DHCP process” is a requirement of the MHS1 but that an external DHCP server is not. Section 2.3.4 discloses that the MHS1 could perform local DHCP. JA1355. Section 2.3.4 lists the requirements for a user to “sign-on” to the MHS1. *Id.* This section, like the rest of the document, lists *requirements of the MHS1* itself, not requirements of external devices. *See* JA1352. Section 2.3.4 specifically indicates that a “[p]re-condition” of signing on to the MHS1 is that the user’s client device (referred to as a “Use laptop or PDA”) must have “DHCP enabled.” JA1355. DHCP must be enabled to allow the client device to receive DHCP messages from the MHS1.

After the user connects to the MHS1’s mobile access point in step two, step three indicates that “the association and DHCP process is complete[d].” *Id.* Thus,

Section 2.3.4 lists DHCP as a requirement of the MHS1 but does not list an external DHCP server as a requirement. Section 2.3.4 does not include any notes or comments that the DHCP process is performed by an external server rather than the MHS1. *Id.* Section 2.3.4 does not list an accessible external DHCP server as a pre-condition for signing on, even though it lists the rather obvious pre-condition that the MHS1 has to be “powered up.” *Id.*

Exhibit 2009, therefore, supports the credibility of Mr. LeBlanc’s testimony that the MHS1 performed local DHCP without an external DHCP server.

**2. The Board ignored pertinent evidence that Exhibit 2020 expressly discloses that the MHS1 performed local DHCP.**

Exhibit 2020—a troubleshooting guide for the MHS1—further corroborates Mr. LeBlanc’s testimony that the MHS1 performed local DHCP. Exhibit 2020 presents several questions and answers about use of the MHS1. The second question—“Is your computer set to request a dynamic IP address (using DHCP: Dynamic Host Control Protocol) and network DNS?”—shows that *the MHS1 itself* used DHCP to assign Internet addresses. JA1392. The third question—“Did your computer receive an IP address *from the Mobile Hotspot*? The *Mobile Hotspot assigns* users private IP addresses in the range 90.0.0.2 – 90.0.0.255.”—shows that *the MHS1 itself* assigned the Internet addresses. JA1393 (emphases added). Further, the “Address Type” field shown on the screen shots on page 6 (JA1393) show that the Internet addresses are “[a]ssigned by DHCP.” *Id.* Exhibit

2020 thus further corroborates Mr. LeBlanc's testimony that the MHS1 performed local DHCP.

The Board agrees that Exhibit 2020 shows that the MHS1 performed local DHCP. JA18–19. However, the Board disregarded Exhibit 2020 in its entirety for the sole reason that it is dated after Boehm's filing date. *Id.* Thus, the Board found that "Exhibit 2020 does not corroborate any pre-Boehm conception or reduction to practice of any feature recited in claim 1." *Id.*

The Board erred by ignoring Exhibit 2020 solely because it is dated after Boehm's filing date. *See Ohio Willow*, 735 F.3d at 1348 (finding that post-critical date evidence was relevant corroborating evidence under the rule of reason). The rule of reason requires examination of *all* pertinent evidence to assess the inventor's credibility, including contemporaneous evidence arising later in time. *Fleming*, 774 F.3d at 1377 (citing *Sandt*, 264 F.3d at 1350). But the Board did not conduct a reasoned examination of Exhibit 2020 to determine whether it corroborates Mr. LeBlanc's testimony. Instead, the Board categorically disregarded Exhibit 2020 for the sole reason that it is dated after Boehm's filing date. JA18–19. That categorical exclusion was legal error.

If the Board had considered Exhibit 2020, it would have concluded that Exhibit 2020 corroborates Mr. LeBlanc's testimony. This exhibit was created on December 12, 2002, just weeks after the successful October 22, 2002 road test as

the inventors transitioned to developing a commercially acceptable product.

JA1388. Exhibits 2009 and 2020 each describe the same MHS1 system that was road tested. There is no evidence that the local DHCP functionality shown in Exhibit 2020 was absent from the MHS1 system that had been road tested a few weeks earlier, or that it was absent from the MHS1 system described in Exhibit 2009 (dated a few weeks before the road test). Likewise, there is no evidence that the local DHCP functionality shown in Exhibit 2020 was a post-critical date enhancement. Exhibit 2020 is thus further corroboration of Mr. LeBlanc's testimony that the pre-critical date MHS1 system described in Exhibit 2009 and road tested on October 22, 2002 performed local DHCP.

**3. The Board ignored pertinent evidence that Windows 98—the MHS1's operating system—had the functionality to perform local DHCP.**

Mr. LeBlanc testified that the inventors used functionality in Windows 98 to implement local DHCP in the MHS1. That testimony is corroborated by Exhibit 2037, an excerpt from an official Microsoft document published on Microsoft's support webpage. JA1550–1551. Exhibit 2037 describes a feature of Windows 98 called "Description of Internet Connection Sharing." *Id.* The document discloses that the Internet Connection Sharing feature of Windows 98 included a component called "DHCP Allocator," which is described as a "simplified DHCP service that assigns the IP address, gateway, and name server on the local network." *Id.*

Accordingly, Exhibit 2037 establishes that the Windows 98 operating system had local DHCP capability, consistent with and supportive of Mr. LeBlanc's testimony.

The Board does not question that Windows 98, as described in Exhibit 2037, had local DHCP capability. JA16. But the Board categorically disregarded Exhibit 2037 based on its finding that "Patent Owner has not established sufficiently that the *version* of Windows 98 used in the MHS1 included the stated functions." *Id.* (emphasis added). The Board's finding disregards Mr. LeBlanc's testimony, corroborated by Ex. 2009, that the stated functions were implemented via a local DHCP process of the MHS1 running on the Windows 98 operating system. Rather than considering the evidence in its entirety, the Board considered whether each source of evidence could, by itself, support the presence of the claim limitation. That was legal error.

The Board also pointed to Exhibit 2037's "last reviewed" date in 2007 as a reason to give the exhibit "little or no weight." JA19. But by categorically excluding this exhibit based on its "last reviewed" date, the Board failed to consider all of the relevant evidence, as well as the characteristics of the document that show that the exhibit is reliable and credible evidence of Windows 98's local DHCP capability before November 4, 2002.

Exhibits 2036 and 2037 show that the Second Edition of Windows 98 included DHCP functionality. JA1547–1551. Exhibit 2035 shows that the Second

Edition of Windows 98 was released in 1999, several years before the inventors were developing the MHS1. JA1544–1546. These documents further corroborate Mr. LeBlanc’s testimony that the MHS1 implemented a local DHCP process running on the Windows 98 operating system.

Furthermore, Exhibit 2037 is an official Microsoft document. There is no dispute that Windows 98 was not created in 2007, and there is no evidence, or even argument, that Microsoft was adding substantive networking functionality to Windows 98 *after* November 4, 2002, years after the release of Windows 98. Microsoft is a well-known third party with no interest in this IPR and no reason to fabricate or incorrectly report the features of Windows 98. Indeed, when Exhibit 2037 was published Microsoft was motivated to provide accurate technical information about Windows 98, so that those who still had the archaic operating system could use its features.

Considering the evidence in its totality, as the Board is required to do, Exhibit 2037 helps show the credibility of Mr. LeBlanc’s testimony that a local DHCP process was implemented in the MHS1 using Windows 98

Notably, the Board also disregarded independent testimony of Dr. Tewfik based on his personal knowledge that Windows 98 had Internet connection sharing features in the late 1990s:

And then you had a function which was embedded in the Windows 98 system, which I also had a chance to use back in the late '90s, which allowed for sharing of internet connections.

JA1046–47 at 12:21–13:2. Dr. Tewfik’s testimony shows that the “Internet Connection Sharing” features of Windows 98, as shown in Exhibit 2037, were present in Windows 98 back in the late 1990s; they are not networking functionality that was added to Windows 98 after the filing of the Boehm reference. The Board disregarded Dr. Tewfik’s testimony based on the erroneous conclusion that his testimony was based on information provided to him by Mr. LeBlanc. In fact, Dr. Tewfik’s testimony about Windows 98 was based on personally using it in the 1990s. JA17.

Accordingly, the Board reached its conclusion that IV had no evidence to corroborate Mr. LeBlanc’s testimony of the presence of local DHCP functionality in the pre-critical date MHS1 system only by ignoring key pieces of highly probative evidence. If the Board had considered all of this evidence, the Board would have concluded that Exhibit 2037, Dr. Tewfik’s testimony, and the other evidence sufficiently corroborates Mr. LeBlanc’s testimony that the MHS1 had local DHCP capability before Boehm’s filing date.

**4. The Board improperly discounted unchallenged inventor testimony that the MHS1 was a stand-alone system.**

As it did with respect to the *LAN routing system* limitation, the Board also improperly discounted unchallenged testimony of Mr. LeBlanc with respect to the *stand-alone system* limitation. While inventor testimony requires corroboration, this does not mean that inventor testimony can be disregarded. Indeed, inventor testimony is normally the *primary* evidence of earlier conception. Corroborating evidence is sufficient, under the rule of reason, if it supports the conclusion that the inventor's testimony is credible. *Fleming*, 774 F.3d at 1377 (citing *Sandt*, 264 F.3d at 1350). Independent documentary evidence that alone establishes the earlier conception of every claim limitation is not required. *See, e.g., Sandt*, 264 F.3d at 1351.

Mr. LeBlanc offered unchallenged testimony that the MHS1 was a stand-alone system. JA1316, JA1320 ¶ 19, JA1322 ¶ 24. He testified that the October 22, 2002 road test of the MHS1 confirmed, among other things, that the MHS1 could operate independently of an external system:

During that road test, we confirmed that we were able to wirelessly access the Internet with client devices (having 802.11b functionality) through the MHS1 using a shared Internet connection. For example, we confirmed that user devices could connect via WiFi and obtain an IP address *via DHCP implemented locally at the MHS1*.

JA1322 ¶ 24 (emphasis added). Accordingly, because the MHS1 successfully implemented local DHCP, the MHS1 was a stand-alone system. Motorola did not challenge Mr. LeBlanc's testimony through cross-examination or otherwise. Moreover, the Board did not find that his testimony was inaccurate or not credible. JA16–19.

**5. The Board's finding of insufficient corroboration is inconsistent with its findings that both Mitchell and Veeck are stand-alone systems.**

While the Board concluded that IV's corroborating evidence did not affirmatively state that the MHS1 did not require an external DHCP server (JA18), the Board applied a wholly different standard when assessing the sufficiency of Motorola's obviousness evidence. Indeed, the Board found that both the prior art Mitchell and Veeck patents disclose the *stand-alone system* limitation, even though neither of those references expressly discloses the capability to perform DHCP without an external server. The Board clearly erred by applying a double-standard to the Patent Owner and the Petitioner, requiring more proof for prior invention than for obviousness.

With respect to Mitchell, the Board rejected IV's argument that "client devices onboard the aircraft cannot communicate with the Internet without the ground proxy server 294 because of the management functions which it performs." JA26–27. Significantly, Mitchell discloses that the ground proxy server 294

performs DHCP, and it does not disclose that any other system component can perform DHCP. JA811 at 21:2–7. Nevertheless, despite the absence of an express disclosure in Mitchell of a system capable of performing DHCP without an external server, and with evidence suggesting the contrary, the Board nonetheless found that Mitchell discloses a stand-alone system. JA27.

Had the Board used the standard it applied when considering the presence of local DHCP functionality in Mitchell to assess the same functionality in IV’s evidence of corroboration of the MHS1 system, including but not limited to Exhibit 2009, the Board would have had no choice but to conclude that IV had ample evidence corroborating that the MHS1 system met the *stand-alone system* limitation. The double-standard in assessing Mitchell and IV’s evidence further shows that the Board’s conclusion that IV’s corroborating evidence is insufficient is erroneous.

With respect to Veeck, the Board rejected IV’s argument that “Veeck explicitly teaches that the system is *not* a ‘stand-alone system.’” JA32 (citing JA361–62). As the Board noted, IV argued that (1) Veeck relies on the external ground server disclosed in Galipeau, which Veeck incorporates by reference, “for managing communications with the Internet” and (2) Motorola’s expert’s “testimony regarding Veeck’s disclosure of how external service provider

communications device 60 is coupled to the Internet shows Veeck is reliant upon Galipeau.” JA33. The Board rejected both of IV’s arguments, stating:

Instead, we are persuaded by Petitioner’s argument (described above) that the use of a wireless Internet access interface “is *implied* by Veeck’s disclosure that the wireless data management system can be utilized on vehicles such as aircraft, buses, ships, and trains.”

*Id.* (emphasis added). Thus, the Board found that Veeck discloses a stand-alone system by *implication* because it was used in mobile systems. *Id.*

But although the MHS1 was similarly designed for use on vehicles such as “commuter trains, taxis, limousines, and ferries” (JA1352), the Board did not give the MHS1 the benefit of the same implication that the MHS1 was a stand-alone system. Moreover, even though Veeck does not disclose DHCP of any kind, let alone *local* DHCP, the Board still found that Veeck is a stand-alone system. JA33.

Had the Board used the standard it applied when considering the presence of local wireless Internet access in Veeck to assess the same functionality in IV’s evidence of corroboration of the MHS1 system, including but not limited to Exhibit 2009, the Board would have had no choice but to conclude that IV had ample evidence corroborating that the MHS1 system met the *stand-alone system* limitation. The double-standard in assessing Veeck and IV’s evidence further

shows that the Board's conclusion that IV's corroborating evidence is insufficient is erroneous.

**E. The Board's alternative finding that the inventors did not appreciate the *LAN routing system and stand-alone system* limitations at the time of conception is erroneous.**

As explained above, the Board discounted IV's evidence that the Windows 98 installed on the MHS1 had the functionality to allow the MHS1 to operate as a stand-alone system. The Board alternatively found that the inventors did not *appreciate* that the MHS1 with Windows 98 installed had the required stand-alone functionality at the time of the alleged conception. JA17.

In rejecting IV's evidence of conception, the Board misapplied the doctrine that "[c]onception requires contemporaneous recognition and appreciation of the limitations of the claimed invention, not merely fortuitous inherency." *Mycogen Plant Sci. v. Monsanto Co.*, 243 F.3d 1316, 1332 (Fed. Cir. 2001). "Fortuitous inherency" typically arises in priority disputes involving unpredictable arts, such as chemistry or biotechnology, where there are plausible scenarios in which the inventors may not have fully understood the properties of their inventions at the time of conception. The doctrine prevents inventors from claiming, as part of their inventions, properties or characteristics that they did not even know about or appreciate at the time of conception, but that they only recently discovered were inherently present in their invention.

Here, there is no plausible scenario in which “fortuitous inherency” would arise. The inventors—along with every other person of skill in the art of computer networking—knew the computer networking capabilities of the Windows 98 operating system, which was the dominant computer operating system in the late 90s and at the turn of the Century. In 2002, Windows 98 was a widely distributed and well-documented operating system that had been released several years earlier and whose computer networking features were widely known and understood. As a computer operating system, it was (by design) predictable and repeatable. Windows 98 was not in any way analogous to a newly created chemical compound or biotechnology product with mysterious and unknown properties.

Contrary to the Board’s theory, the inventors did not build the MHS1 in 2002—with no knowledge that it had a LAN routing system and was a stand-alone system—only to discover later that the MHS1 had these features all along.

The evidence shows that the inventors always knew and understood that the MHS1 had these features. Mr. LeBlanc testified that he personally conducted an actual road test that showed that the MHS1 successfully managed the data path to the Internet and successfully performed local DHCP. JA1320 ¶ 19, JA1322 ¶ 24. Mr. LeBlanc did not rely on an after-the-fact inherency claim to show that the MHS1 managed the data path and performed local DHCP; he testified that he knew that the MHS1 had the claimed functionality and designed the MHS1 to

incorporate that functionality. *Id.* Moreover, as explained at length above, the single most reasonable interpretation of Exhibit 2009 and the other documentary evidence of record supports Mr. LeBlanc’s testimony that the MHS1 managed the data path to the Internet and performed local DHCP.

IV did not rely upon the Windows 98 documents and testimony as primary evidence to prove that the MHS1 *inherently* met the *LAN routing system* and *stand-alone system* limitations. Rather, the Windows 98 evidence is additional corroborating evidence that lends credibility to Mr. LeBlanc’s testimony.

Obviously, Mr. LeBlanc’s testimony would not be credible if Windows 98 did *not* support the functionality that the MHS1 needed in order to meet the *LAN routing system* and *stand-alone system* limitations. Conversely, however, the evidence that Windows 98 *did* have the required functionality—along with the other corroborating evidence—bolsters the credibility of Mr. LeBlanc’s testimony.

In fact, Mr. LeBlanc’s testimony is not just one of multiple equally credible explanations of the evidence; it is the single most credible explanation of the evidence. It is simply not credible that the inventors did not know, at the time of conception, that the MHS1 had the computer networking capabilities that were standard on Windows 98 computers at the time. Those capabilities were and are a matter of public record, easily accessible to any person of ordinary skill in computer networking. Therefore, the Board’s “fortuitous inherency” theory—that

the inventors did not appreciate until 2014 that the MHS1 had well-known Windows 98 features—rests upon an implausible interpretation of the evidence that is contrary to the rule of reason. Under a proper application of the rule of reason, the single most plausible interpretation of the evidence is that Mr. LeBlanc’s testimony is true, that the MHS1 had a LAN routing system and was a stand-alone system, and that the inventors knew it at the time of conception.

Therefore, the Board improperly ignored the Rule of Reason, choosing to believe a distorted and implausible view of the evidence over the most credible interpretation of the evidence.

**F. Because Boehm is not prior art under the proper application of the Rule of Reason, the Board’s judgment of unpatentability is not supported by substantial evidence.**

The Board relied upon Boehm to support its finding of unpatentability of every challenged claim of the ’771 Patent. JA22 (finding Claims 1 and 2 anticipated by Boehm); JA28 (finding Claims 1, 3, 4, 7, and 18 obvious over Mitchell and Boehm); JA33–34 (finding Claims 1–4 and 18 obvious over Veeck, Boehm, and Mitchell). Further, each of Motorola’s proposed grounds of unpatentability upon which the IPR trial was instituted relies upon Boehm to support Motorola’s unpatentability argument. JA149 (arguing Claims 1 and 2 are anticipated by Boehm); JA154 (arguing Claims 1, 3, 4, 7 and 18 would have been obvious over Mitchell, Boehm, and/or Kellerer); JA178 (arguing Claims 1–4 and

18 would have been obvious over Veeck, Kellerer, Boehm, and/or Mitchell).

Accordingly, this Court should reverse the Board's finding that Boehm is prior art, leaving no evidentiary basis to affirm the Board's judgment of unpatentability, or for the Board to reach the same judgment of unpatentability on remand. Therefore, this Court should reverse the Board's finding that Boehm is prior art, and concomitantly it should also reverse the Board's judgment of unpatentability.

**VI. CONCLUSION AND STATEMENT OF RELIEF SOUGHT**

For the foregoing reasons, IV respectfully requests that this Court reverse the Board's determination that Boehm is prior art and the Board's judgment that the challenged claims of the '771 Patent are unpatentable.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Date: March 25, 2016

By: /s/ Brenton R. Babcock  
Brenton R. Babcock  
Edward M. Cannon

*Attorneys for Appellant*  
INTELLECTUAL VENTURES II LLC.

**CERTIFICATE OF COMPLIANCE**

1. This brief complies with the type-volume limitation of Federal Rule of Appellate Procedure 32(a)(7)(B)(i). This brief contains 13,748 words, excluding the parts of the brief exempted by Federal Rule of Appellate Procedure 32(a)(7)(B)(iii).

2. This brief complies with the typeface requirements of Federal Rule of Appellate Procedure 32(a)(5) and the type style requirements of Federal Rule of Appellate Procedure 32(a)(6). This Brief has been prepared in a proportionally spaced typeface using Microsoft Word 2010 in 14 point font Times New Roman.

KNOBBE, MARTENS, OLSON & BEAR, LLP

Date: March 25, 2016

By: /s/Brenton R. Babcock  
Brenton R. Babcock  
Edward M. Cannon

*Attorney for Appellant*  
INTELLECTUAL VENTURES II LLC

**CERTIFICATE OF SERVICE**

The undersigned counsel hereby certifies that on March 25, 2016, the foregoing **BRIEF OF APPELLANT INTELLECTUAL VENTURES II LLC** was filed using the Court's CM/ECF system, which will send notice of such filing to all registered CM/ECF users.

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: March 25, 2016

By: /s/ Brenton R. Babcock

Brenton R. Babcock, *counsel of record*

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Attorneys for Patent Owner-Appellant,  
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## **ADDENDUM**

[Trials@uspto.gov](mailto:Trials@uspto.gov)  
571-272-7822

Paper 46  
Entered: September 9, 2015

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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MOTOROLA MOBILITY LLC,  
Petitioner,

v.

INTELLECTUAL VENTURES II LLC,  
Patent Owner.

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Case IPR2014-00504  
Patent 7,382,771 B2

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Before MICHAEL W. KIM, PATRICK R. SCANLON, and  
KRISTINA M. KALAN, *Administrative Patent Judges*.

SCANLON, *Administrative Patent Judge*.

FINAL WRITTEN DECISION  
*35 U.S.C. § 318(a) and 37 C.F.R. § 42.73*

IPR2014-00504  
Patent 7,382,771 B2

## I. INTRODUCTION

### A. *Background*

Petitioner, Motorola Mobility LLC, filed a Revised Petition (Paper 4, “Pet.”)<sup>1</sup> requesting an *inter partes* review of claims 1–4, 7, and 18 of U.S. Patent No. 7,382,771 B2 (Ex. 1001, “the ’771 patent”) pursuant to 35 U.S.C. §§ 311–319. Patent Owner, Intellectual Ventures II LLC, subsequently filed a Preliminary Response (Paper 7, “Prelim. Resp.”). On September 10, 2014, we instituted an *inter partes* review as to all challenged claims (Paper 12, “Dec. on Inst.”).

After institution, Patent Owner filed a Patent Owner Response (Paper 20, “PO Resp.”), and Petitioner filed a Reply (Paper 26, “Pet. Reply”). Petitioner relies on the Declaration of Sumit Roy, Ph.D. (Ex. 1010, the “Roy Declaration”) and the Second Declaration of Sumit Roy, Ph.D. (Ex. 1012, the “Second Roy Declaration”) in support of its contentions, and Patent Owner relies on the Declaration of Ahmed H. Tewfik, Ph.D. (Ex. 2004, the “Tewfik Declaration”) and the Declaration by Larry LeBlanc (Ex. 2006, the “LeBlanc Declaration”) in support of its contentions.

Patent Owner filed a Motion for Observation (Paper 31, “Mot. for Obs.”) on the cross-examination testimony of Petitioner’s declarant, Dr. Roy. Petitioner filed a response (Paper 40, “Obs. Resp.”).

Petitioner filed a Motion to Exclude (Paper 33, “Mot. to Exclude”) certain Exhibits submitted by Patent Owner in the proceeding. Patent Owner filed an Opposition to the Motion to Exclude (Paper 37, “Opp. to

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<sup>1</sup> Paper 4 is a Revised Petition for *inter partes* review, filed March 25, 2014. The original Petition for *inter partes* review (Paper 1) has been accorded the filing date of March 10, 2014. Paper 3.

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Mot. to Exclude”), and Petitioner filed a Reply (Paper 41, “Pet. Reply to Mot. to Exclude”).

An oral hearing was held on May 5, 2015. A transcript of the hearing is included in the record. Paper 45 (“Tr.”).

We have jurisdiction under 35 U.S.C. § 6(b). This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons that follow, we determine that Petitioner has shown by a preponderance of the evidence that claims 1–4, 7, and 18 of the ’771 patent are unpatentable. Petitioner’s Motion to Exclude is dismissed.

*B. Related Matters*

The parties indicate that the ’771 patent is involved in the following district court proceeding: *Intellectual Ventures I LLC v. Motorola Mobility LLC*, No. 0:13-cv-61358-RSR (S.D. Fla.). Pet. 2; Paper 6, 1.

*C. The ’771 Patent*

The ’771 patent, titled “Mobile Wireless Hotspot System,” issued on June 3, 2008. The ’771 patent relates to “providing a mobile wireless access point for use with high-speed wireless devices.” Ex. 1001, 1:5–7. Figure 2, reproduced below, illustrates Mobile Hotspot System (“MHS”) 40 for accomplishing this objective:

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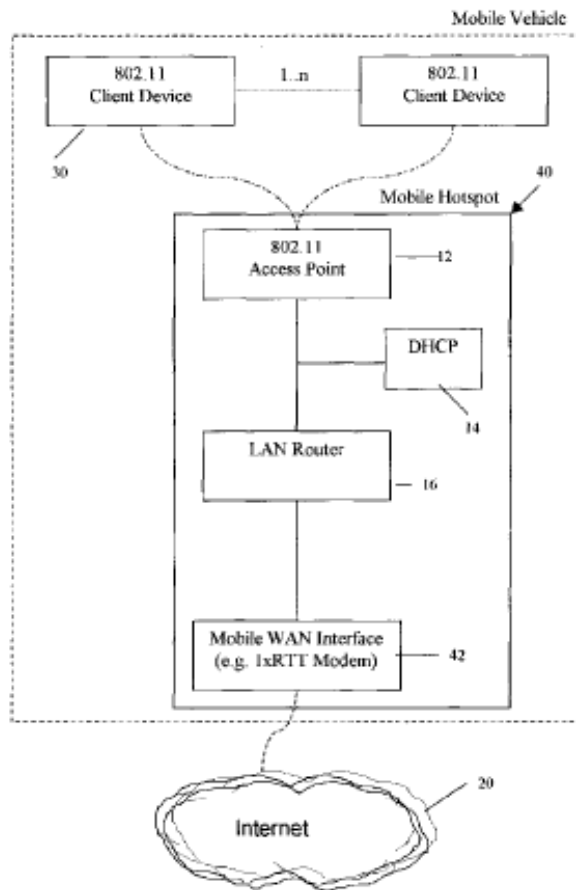


Figure 2 depicts Mobile Hotspot System (“MHS”) 40.

MHS 40 includes access point 12 for connecting with client devices 30 and mobile long-range wireless (“WAN”) interface 42 for establishing an Internet connection. *Id.* at 3:37–42. Mobile WAN interface 42 allows MHS 40 to be deployed in a moving vehicle. *Id.* at 3:42–44. Local Area Network (“LAN”) Router 16 directs traffic between access point 12 and mobile WAN interface 42. *Id.* at 3:33–34, 4:1.

*D. Illustrative Claim*

Claim 1 of the ’771 patent, the only independent claim of the challenged claims, is illustrative of the claimed subject matter:

1. A mobile wireless hot spot system, comprising:

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a) a short-range, high-speed wireless access point operative to communicate with short-range client devices;

b) a long-range, wireless Internet access interface operative to communicate with the Internet; and

c) a Local Area Network (LAN) routing system managing the data path between said wireless access point and said Internet access interface,

wherein said mobile wireless hotspot system is a stand-alone system that enables client devices configured for short-range, high-speed wireless Internet access to use said mobile wireless hotspot system to access the Internet without the need to access an external service controller server.

Ex. 1001, 6:16–28.

*E. Prior Art*

The instituted grounds of unpatentability in this *inter partes* review are based on the following prior art:

1. U.S. Patent Application Publication No. 2004/0085944 A1, published May 6, 2004 (“Boehm”) (Ex. 1005);

2. U.S. Patent No. 7,599,691 B1, issued Oct. 6, 2009 (“Mitchell”) (Ex. 1006);

3. U.S. Patent Application Publication No. 2005/0039208 A1, published Feb. 17, 2005 (“Veeck”) (Ex. 1008).

*F. Instituted Grounds of Unpatentability*

We instituted the instant *inter partes* review on the following grounds of unpatentability:

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Reference(s)	Basis	Claims Challenged
Boehm	§ 102(e)	1 and 2
Mitchell and Boehm	§ 103(a)	1, 3, 4, 7, and 18
Veeck, Boehm, and Mitchell	§ 103(a)	1–4 and 18

Dec. on Inst. 20.

## II. ANALYSIS

### A. Claim Construction

In an *inter partes* review, the Board interprets claims using the “broadest reasonable construction in light of the specification of the patent in which [they] appear[.]” 37 C.F.R. § 42.100(b); *In re Cuozzo Speed Techs., LLC*, 793 F.3d 1268, 1277–79 (Fed. Cir. 2015), *reh’g en banc denied*, 2015 WL 4100060 (Fed. Cir. July 8, 2015). Under the broadest reasonable interpretation standard, claim terms are given their ordinary and customary meaning in view of the specification, as would be understood by one of ordinary skill in the art at the time of the invention. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). “In determining the meaning of the disputed claim limitation, we look principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence.” *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 469 F.3d 1005, 1014 (Fed. Cir. 2006) (citing *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–17 (Fed. Cir. 2005) (en banc)).

In this Final Written Decision, we construe only those claim terms in controversy, and we do so only to the extent necessary to resolve the controversy. *See Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999).

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*1. “Local Area Network (LAN) routing system managing the data path between said wireless access point and said Internet access interface”*

In the Petition, Petitioner proposed that the limitation “a Local Area Network (LAN) routing system” in claim 1 be construed as “a local area network or equivalent circuitry communicating data at least between a long range Internet access interface and short range wireless interface of the mobile hotspot.” Pet. 7; *see also* Ex. 1010 ¶ 46 (“the broadest reasonable construction of ‘LAN routing system’ consistent with the specification is ‘a local area network or equivalent circuitry communicating data at least between a long range Internet access interface and short range wireless interface of the mobile hotspot’”); Ex. 1012 ¶ 16 (restating the same construction for “LAN routing system”).

Patent Owner proposes that the limitation “a Local Area Network (LAN) routing system managing the data path between said wireless access point and said Internet access interface” be construed as “a system that communicates data between the access point and the Internet access interface, and manages the data path therebetween by controlling client devices’ access to the Internet and by controlling access to the client devices from the Internet.” PO Resp. 7–8 (citing Ex. 2004 ¶ 18).

Patent Owner argues that Petitioner’s proposed construction is “incorrect because it ignores the plain language of Claim 1, which states that the routing system is for ‘managing’ the data path between the access point and the Internet access interface. *Id.* at 6 (citing Ex. 2004 ¶ 14). On the other hand, Petitioner argues that Patent Owner’s proposed construction is overly narrow in that it requires a routing system to “control” client access to and from the Internet. Pet. Reply 12.

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We agree with Patent Owner that Petitioner’s proposed construction does not take into account properly the “managing the data path” claim language, even given that Petitioner construes only the limitation “a Local Area Network (LAN) routing system” rather than the entire phrase. In any event, we decline to adopt Petitioner’s proposed construction because it erroneously equates a LAN routing system to “a local area network or equivalent circuitry.” We do not view a LAN *routing system* as being equivalent to a LAN itself or circuitry “equivalent” to a LAN, which Petitioner has not described.

We also decline to adopt Patent Owner’s proposed construction, which is not supported adequately. Specifically, Patent Owner does not explain sufficiently why managing the data path necessarily is accomplished “by controlling client devices’ access to the Internet and by controlling access to the client devices from the Internet.” Patent Owner asserts that the Specification of the ’771 patent describes managing the data path “by controlling the client devices’ access to the Internet, such as by requiring authentication before permitting access” and preventing “unauthorized access in the opposite direction by ‘allow[ing] all client devices 30 to share a single external Internet address.’” PO Resp. 5–6 (citing Ex. 1001, 4:1–14); *see also* Tr. 43:10–14 (stating the Specification “talks about managing as controlling the client devices’ access to the Internet, things like authentication, and controlling access to client devices from the Internet, like sharing a single Internet address”). The Specification, however, does not describe “managing the data path” explicitly, and we are not persuaded that the “managing the data path” claim language necessarily includes the authentication and sharing functions described in the cited passages. As

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such, Patent Owner's reliance on the cited passages in its construction seeks to improperly read limitations from the Specification into the claim. *See In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1369 (Fed. Cir. 2004) ("We have cautioned against reading limitations into a claim from the preferred embodiment described in the specification, even if it is the only embodiment described, absent clear disclaimer in the specification.").

Dr. Tewfik testifies that "[i]n computer networking, routing systems allow data to be exchanged between networks by forwarding data to a recipient device in one network from a sending device in another network." Ex. 2004 ¶ 10. Dr. Tewfik further testifies that, "[i]n the '771 patent, the LAN routing system is the LAN [R]outer 16," and the LAN routing system allows data to be exchanged between the short-range local network and the Internet. *Id.* ¶ 11. This testimony is not dissimilar to Dr. Roy's testimony that a LAN routing system "routes (i.e. communicates) data between a client device that is accessible via a short-range wireless interface and the Internet that is accessible [via] a long range Internet access interface." Ex. 1012 ¶ 18. Thus, Dr. Tewfik and Dr. Roy essentially are in agreement that a routing system directs (i.e., exchanges, routes, or communicates) data between networks. This meaning is consistent with the Specification of the '771 patent, which describes LAN Router 16 as "direct[ing] traffic from the access point **12** to the Internet **20** via the fixed WAN interface **18**." Ex. 1001, 3:33–34.

Therefore, applying the broadest reasonable interpretation of the claims in light of the Specification, we interpret the phrase "a Local Area Network (LAN) routing system managing the data path between said wireless access point and said Internet access interface" to mean "a system that directs data

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between a local area network and the Internet by managing the data path between a wireless access point and an Internet access interface.”

## 2. “Internet access”

In its Response, Patent Owner contends that the “ordinary and customary meaning of ‘Internet access’ [in claim 1] is the ‘ability to *send and receive* information via the Internet.’” PO Resp. 8 (citing Ex. 2004 ¶ 19). Patent Owner further contends that the plain language of claim 1 is consistent with this ordinary and customary meaning. *Id.* (citing Ex. 2004 ¶ 20). In addition, Patent Owner argues that Petitioner’s declarant, Dr. Roy, “described the hallmarks of ‘Internet access’ as including the ability to send and receive e-mail and to browse particular webpages,” and both of these activities require sending and receiving information. *Id.* at 9 (citing Ex. 2031, 21:3–11; Ex. 2004 ¶ 21). Lastly, Patent Owner contends that the Specification of the ’771 patent “describes the Internet access offered by the disclosed mobile wireless hotspot system in ways that are consistent with [the asserted] ordinary and customary meaning.” *Id.* (citing Ex. 2004 ¶ 22). Based on these contentions, Patent Owner proposes that “Internet access” should be construed to mean the “ability to send and receive information via the Internet.” *Id.* at 10 (citing Ex. 2004 ¶ 23); *see also* Tr. 43:15–44:10 (arguing that “Internet access” means sending and receiving information).

Petitioner disagrees, arguing that “‘Internet access’ need not include the ability to both receive and send data—either sending or receiving data (e.g., web pages, e-mail) is enough,” and that the “plain meaning of the term ‘Internet access’ includes obtaining web pages or similar data.” Pet. Reply 11 (citing Ex. 1012 ¶¶ 13, 15). Petitioner also argues that Patent Owner’s assertion that Dr. Roy testified that Internet access must be “bi-

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directional” is misleading. *Id.* Instead, Petitioner asserts that Dr. Roy “stated merely that Internet access includes ‘accessing particular Web pages.’” *Id.* (quoting Ex. 2031, 21:3–11). Petitioner argues that Dr. Roy subsequently testified that “if a device can receive e-mail or web pages via the Internet, that device has access to the Internet.” *Id.* (citing Ex. 1012 ¶¶ 13–15).

Petitioner’s arguments are more persuasive. Patent Owner has not explained sufficiently why merely receiving information from the Internet (without the ability to send information to the Internet) is not a form of accessing the Internet. The Specification of the ’771 patent does not describe “Internet access” in terms of requiring the ability to both send and receive information via the Internet. Moreover, contrary to Patent Owner’s assertion (*see* PO Resp. 8), the claim 1 language that the mobile wireless hotspot system “enables client devices . . . to access the Internet” does not suggest the client devices must both send and receive information via the Internet. Thus, we agree with Dr. Roy that by obtaining data via the Internet, a device has accessed the Internet. *See* Ex. 1012 ¶ 13.

Accordingly, based on the full record, we determine that the broadest reasonable interpretation of “Internet access” is “the ability to send and/or receive information via the Internet.”

### 3. “stand-alone system”

In the Decision on Institution, we interpreted “stand-alone system” to mean “a system capable of operating independently of any other system.” Dec. on Inst. 8–9. The parties do not dispute this interpretation (PO Resp. 10; Pet. Reply 13), and we see no reason to modify this interpretation

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in light of the record developed at trial. Accordingly, we adopt this interpretation for this Final Written Decision.

*B. Determination of whether Boehm Qualifies as Prior Art*

The ’771 patent issued from U.S. Patent Application No. 10/386,691, which was filed on March 13, 2003. Ex. 1001, [21], [22]. Petitioner asserts that Boehm qualifies as prior art under 35 U.S.C. § 102(e) because it was filed on November 4, 2002, prior to the earliest effective filing date of the ’771 patent. Pet. 12. Patent Owner contends that Boehm is not prior art with respect to the ’771 patent because a “reference is not available as prior art against a patent under 102(e) if filed after the *invention date* of the patentee.” PO Resp. 12 (citing Pre-AIA 35 U.S.C. § 102(e); *Loral Fairchild Corp. v. Matsushita Elec.*, 266 F.3d 1358, 1362 (Fed. Cir. 2001)). In particular, Patent Owner contends the inventors conceived the invention prior to the November 4, 2002 filing date of Boehm, and reduced the invention to practice either before November 4, 2002 or, alternatively, after November 4, 2002, coupled with diligence beginning prior to November 4, 2002. *Id.* at 13–39.

To remove Boehm as a prior art reference, the record must establish either: (1) a conception and reduction to practice before the filing date of Boehm; or (2) a conception before the filing date of the Boehm patent combined with diligence and reduction to practice after that date. *See Taurus IP, LLC v. DaimlerChrysler Corp.*, 726 F.3d 1306, 1323 (Fed. Cir. 2013). Under either approach, however, it must be proven that conception occurred prior to November 4, 2002. *See id.*

“Conception exists when a definite and permanent idea of an operative invention, including every feature of the subject matter sought to

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be patented, is known.” *Sewall v. Walters*, 21 F.3d 411, 415 (Fed. Cir. 1994). Furthermore, “[t]he conception analysis necessarily turns on the inventor’s ability to describe his invention with particularity. Until he can do so, he cannot prove possession of the complete mental picture of the invention.” *Burroughs Wellcome Co. v. Barr Labs., Inc.*, 40 F.3d 1223, 1228 (Fed. Cir. 1994). Objective evidence that corroborates an inventor’s testimony regarding the conception of the invention is required “because of the danger in post-hoc rationales by an inventor claiming priority.” *Invitrogen Corp. v. Clontech Labs., Inc.*, 429 F.3d 1052, 1065 (Fed. Cir. 2005). The sufficiency of corroboration is determined according to a “rule of reason.” *Price v. Symsek*, 988 F.2d 1187, 1195 (Fed. Cir. 1993). This approach, however, “does not dispense with the requirement for some evidence of independent corroboration.” *Coleman v. Dines*, 754 F.2d 353, 360 (Fed. Cir. 1985).

### *1. Patent Owner’s Arguments*

Patent Owner primarily relies on the testimony of Mr. LeBlanc, one of the inventors of the ’771 patent, to prove conception. PO Resp. 13–22; Tr. 28:22–29:2. In addition, Patent Owner relies on a document titled “MHS1 Systems Requirements Document” (Ex. 2009), which describes the inventors’ first generation mobile wireless hotspot system,<sup>2</sup> to corroborate Mr. LeBlanc’s testimony. PO Resp. 14; *see also* Tr. 28:6–8 (referring to Exhibit 2009 as “the key document that Mr. LeBlanc points to as his conception evidence”). Mr. LeBlanc testifies that Exhibit 2009 “shows that we had conceived of the mobile hotspot system invention no later than

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<sup>2</sup> The inventors referred to the first generation or version of their mobile wireless hotspot system as the “MHS1.” Ex. 2006 ¶ 9.

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September 25, 2002.” Ex. 2006 ¶ 14. The LeBlanc Declaration also presents a claim chart, which Mr. LeBlanc testifies “provides citations to Exhibit 2009, along with explanations which show our conception of the subject matter described in Claims 1–4, 7, and 18 of the ’771 patent.” *Id.* ¶ 15.

Patent Owner argues that the hardware components of the MHS1 “included a Microsoft Windows 98 laptop computer, as well as a Sierra Wireless 555 Aircard and a Prism2 card which both plugged into the laptop computer.” PO Resp. 14–15 (citing Ex. 2009 § 2.4.1; Ex. 2004 ¶¶ 34–35). Regarding the LAN routing system of claim 1, Patent Owner asserts

The Windows 98 operating system included a built-in access point controller, Internet connection sharing functionality, Dynamic Host Configuration Protocol (DHCP) functionality, Network Address Translation (NAT) functionality, and Wired Equivalent Privacy (WEP) functionality. (*Id.*) Exhibit 2009 demonstrates that the inventors had conceived of using these functions to provide a routing system for the MHS1.

*Id.* at 15; *see also* Ex. 2006 ¶ 15 (“The Windows 98 operating system included tools and functions for providing a software access point controller, Internet connection sharing functionality, DHCP functionality, and Wired Equivalent Privacy (WEP) functionality, which used authentication.”).

Patent Owner also argues that Exhibit 2009 demonstrates that “the inventors intended that the MHS1 would communicate Internet data between the Internet interface card and the access point,” and that the MHS1 would control access between the Internet and the client devices. PO Resp. 15–16 (citing Ex. 2009 § 2.3.4; Ex. 2004 ¶¶ 34–35; Ex. 1001, 4:10–14, 5:18–30).

Regarding the claim 1 limitation that the “mobile wireless hotspot system is a stand-alone system that enables client devices configured for

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short-range, high-speed wireless Internet access to use said mobile wireless hotspot system to access the Internet without the need to access an external service controller server,” Patent Owner argues that “Exhibit 2009 demonstrates that the MHS1 was a stand-alone system” because “it makes no reference to accessing an external service controller.” PO Resp. 17. According to Patent Owner, Exhibit 2009 does reference, however, “providing DHCP functionality for the client devices.” *Id.* (citing Ex. 2009 § 2.3.4). Furthermore, Patent Owner argues that “Windows 98 included built-in network address translation functionality and other services such that an external service controller was not needed.” *Id.* (citing Ex. 2004 ¶ 34).

## 2. *Petitioner’s Arguments*

Petitioner argues that Patent Owner’s evidence fails to show conception of the claim 1 limitation of “a stand-alone system that enables client devices . . . to access the Internet without the need to access an external service controller server.” Pet. Reply 2. In particular, Petitioner argues that “Patent Owner is using the *lack of discussion of an external DHCP server* in Exhibit 2009 to attempt to show that the system described therein affirmatively did not access an external service controller,” and this “contention does not bear scrutiny.” *Id.* at 3. According to Petitioner, “[n]owhere does Exhibit 2009 explain that the “DHCP process” is carried out internally in the hotspot *without accessing an external DHCP server*.” *Id.* at 4 (citing Ex. 2009 § 2.3.4; Ex. 1012 ¶¶ 29–31).

Petitioner also argues that the Tewfik Declaration (Ex. 2004) does not corroborate conception. *Id.* at 4–5. Petitioner asserts that the chart in ¶ 34 of the Tewfik Declaration “was not prepared by Dr. Tewfik—it was provided to him by Patent Owner’s counsel, who in turn obtained it from the

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inventor, Larry LeBlanc” (*id.* at 5 (citing Ex. 1014, 8:16–9:3, 9:9–19)), and “Dr. Tewfik did nothing to verify the chart’s information other than to review Exhibit 2009 and rely on his personal experience” (*id.* (citing Ex. 1014, 10:1–14)).

In addition, Petitioner argues that

“[c]onception requires contemporaneous recognition and appreciation of the limitations of the claimed invention, not merely fortuitous inherency.” *Mycogen Plant Science, Inc. v. Monsanto Co.*, 252 F.3d 1306, 1314 (Fed. Cir. 2001). An inventor who failed to appreciate the claimed inventive features at the time of alleged conception cannot use his later recognition of those features to retroactively cure his inadequate conception. *See Hitzeman v. Rutter*, 243 F.3d 1345, 1358–59 (Fed. Cir. 2001).

Pet. Reply 5. According to Petitioner, however, “none of Patent Owner’s documents show that the patentees recognized that Windows 98 had features that would enable Internet access without accessing an external service controller server.” *Id.* Petitioner asserts that “[t]he single reference to Windows 98 [in Exhibit 2009] does not show conception of a system that enables Internet access *without an external service controller server.*” *Id.* at 6.

### 3. Discussion

We disagree with Patent Owner that Exhibit 2009 demonstrates that the inventors conceived of using the functions alleged to be included in the Windows 98 operating system to provide a LAN routing system for the MHS1. First, Patent Owner has not established sufficiently that the version of Windows 98 used in the MHS1 included the stated functions. Exhibit 2009 does not describe these functions. And, although Mr. LeBlanc testifies that Windows 98 included such functions (Ex. 2006 ¶ 15), “[i]nventor

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testimony alone is insufficient to prove conception; some form of corroboration must be shown.” *Slip Track Sys., Inc. v. Metal-Lite, Inc.*, 304 F.3d 1256, 1263 (Fed. Cir. 2002). Dr. Tewfik’s related testimony (*see* Ex. 2004 ¶¶ 34–36) does not provide sufficient corroboration because it is based on information provided by Mr. LeBlanc rather than Dr. Tewfik’s independent analysis. *See* Ex. 1014, 10:1–14.

Second, even if the version of Windows 98 used in the MHS1 did have the functions as asserted, Patent Owner does not present sufficient evidence that the inventors knew of and intended to use these functions at the time of the alleged conception. As noted by Petitioner, this failure to show contemporaneous intent by the inventors to use these functions in the manner now asserted defeats conception. *See, e.g., Mycogen*, 252 F.3d at 1314 (“Conception requires contemporaneous recognition and appreciation of the limitations of the claimed invention, not merely fortuitous inherency.”).

Patent Owner’s argument that Exhibit 2009 demonstrates the inventors intended the MHS1 to communicate Internet data between the Internet interface card and the access point is not persuasive because such intent is not sufficient to show conception of the invention as recited in claim 1. Furthermore, we disagree with Patent Owner that Exhibit 2009 demonstrates that the MHS1 would *control* (i.e., “manage”) access between the Internet and the client devices. This argument relies on the description in Exhibit 2009 of a “welcome page from the MHS1 [being] displayed” when the browser is started and the description in the ’771 patent of the welcome page being used to provide authentication. PO Resp. 16 (citing Ex. 2009 § 2.3.4; Ex. 1001, 5:18–30). Exhibit 2009 alone, however, merely

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describes displaying a welcome page; there is no mention of providing authentication or any other type of control. A disclosure from the '771 patent, which was filed March 13, 2003, cannot be relied on to show a conception prior to November 4, 2002.

Moreover, Patent Owner's evidence fails to establish adequately the prior conception of a stand-alone system that enables Internet access without the need to access an external service controller server. We agree with Petitioner that the fact that Exhibit 2009 does not discuss an external DHCP server does not establish affirmatively that the MHS1 as described in Exhibit 2009 did not need to access an external service controller. Furthermore, *even if* Windows 98 provided functions such that an external service controller was not needed, as asserted by Patent Owner (*see* PO Resp. 17), there is insufficient evidence that the inventors intended to use this functionality to avoid the need for the external server.

We also find the arguments made in Patent Owner's Motion for Observations unpersuasive. For example, Patent Owner contends that certain deposition testimony by Dr. Roy (*see* Ex. 2038, 10:3–14, 11:20–12:19, 14:19–15:16, 15:18–16:1, 38:18–42:22) is relevant to Exhibit 2020, which states at page 6 that “[t]he Mobile Hotspot assigns users private IP addresses”, and this testimony “confirms that [the MHS1] was a ‘stand-alone system’ because it functioned as a DHCP server itself, not as a relay agent for a separate DHCP server.” Mot. for Obs. 1–2. Patent Owner's own evidence, however, shows that Exhibit 2020 was created after November 4, 2002. Exs. 2020, 2021; *see also* PO Resp. 31–32 (“[t]he internal metadata for the Trouble Shooting Guide shows that it was created on December 13, 2002”). We thus agree with Petitioner that “Exhibit 2020 does not

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corroborate any pre-Boehm conception or reduction to practice of any feature recited in claim 1.” *See* Obs. Resp. 1.

Patent Owner also contends that Dr. Roy’s deposition testimony regarding Exhibits 2036 and 2037 “provides additional corroboration for [Mr.] LeBlanc’s testimony that he selected and used Windows 98 for its Internet Connection Sharing (ICS) tool to provide the MHS1 with NAT and DHCP functionality.” Mot. for Obs. 5 (citing Ex. 2006, 7–8). This argument is not persuasive. First, Mr. LeBlanc merely testifies that the “MHS1 shall be deployed on a laptop PC (Windows 98)” and that the “Windows 98 operating system included tools and functions” for providing various features including DHCP functionality and network address translation functionality. Ex. 2006 ¶ 15. Mr. LeBlanc does not testify that he “selected and used” Windows 98 for any particular reason, let alone to provide NAT and DHCP functionality. As such, Exhibits 2036 and 2037 do not provide the corroboration asserted by Patent Owner. Second, Exhibits 2036 and 2037 both indicate they were “last reviewed” in 2007. Ex. 2036, 3; Ex. 2037, 2. Because this is several years after the alleged conception date, we determine that Exhibits 2036 and 2037 are entitled to little or no weight with respect to corroborating the alleged conception.

Upon reviewing the record as a whole under the “rule of reason,” we determine that the evidence does not establish that the inventors conceived the invention of the challenged claims prior to November 4, 2002. We, therefore, find that Petitioner has met its burden of proving that Boehm is prior art to the challenged claims under 35 U.S.C. § 102(e).

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*C. Asserted Anticipation of Claims 1 and 2 by Boehm*

Petitioner asserts that claims 1 and 2 are anticipated under 35 U.S.C. § 102(e) by Boehm. Pet. 3, 12–16.

Boehm discloses an “apparatus for providing a portable and adaptable Internet gateway enabling wireless Internet access.” Ex. 1005 ¶ 9. Boehm’s Figure 3, reproduced below, illustrates an exemplary embodiment of such an arrangement:

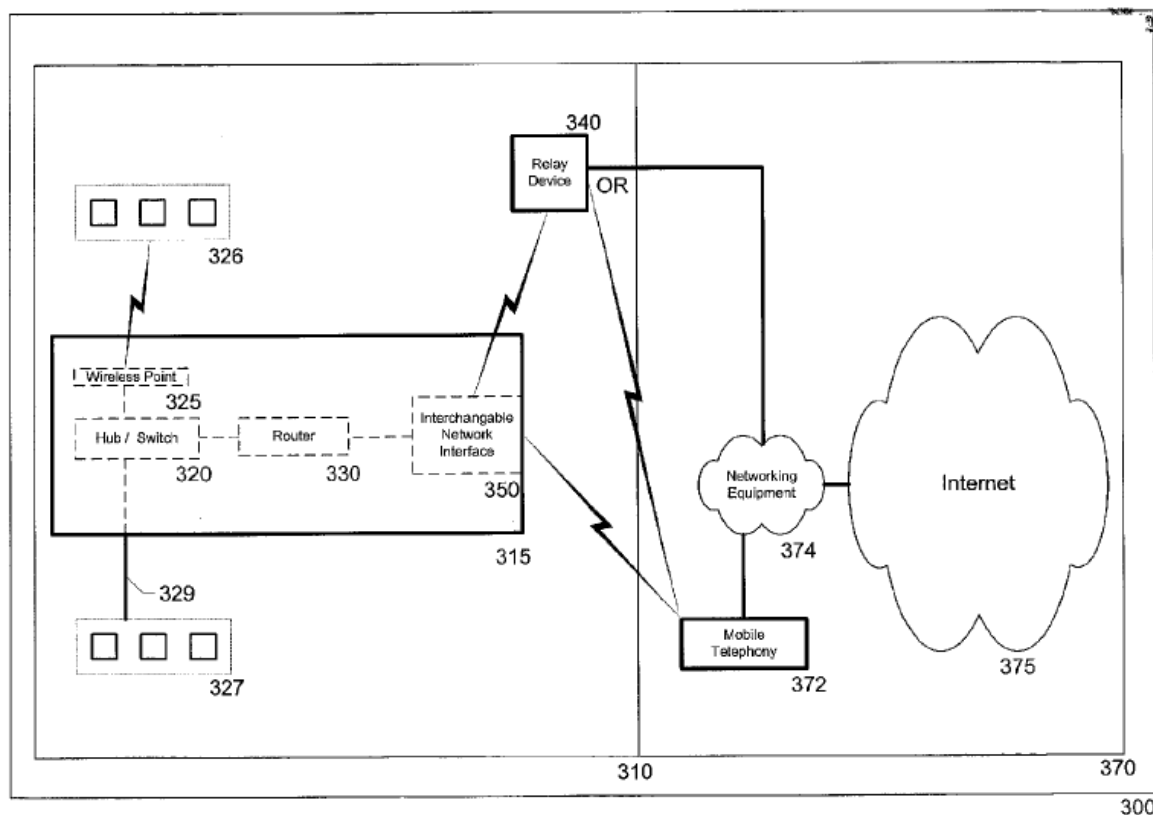


Figure 3 depicts a local area network connected to the Internet.

This embodiment includes internal network 310 and external network 370. *Id.* ¶ 20. Internal network 310 includes portable wireless Internet gateway 315 connected to one or more devices 326, 327 forming a LAN. *Id.* Portable wireless Internet gateway 315 includes, *inter alia*,

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wireless access point 325, router 330, and interchangeable network interface 350. *Id.* Wireless access point 325, which utilizes 802.11b wireless communication technology in one embodiment, provides a wireless interface with devices 326. *Id.* ¶ 21. Router 330 performs several functions, including serving as a barrier to protect the LAN from external network 370, providing routing, filtering, network address translation, DHCP, and other services, and providing a secure bridge between the connected networks. *Id.* ¶ 22.

Boehm's interchangeable network interface 350 provides wireless access to external network 370. *Id.* ¶ 23. "The use of an interchangeable network interface module allows the portable wireless Internet gateway 315 to be easily moved from one location to the next" and "allows the portable wireless Internet gateway 315 to connect to the Internet through a variety of wireless technologies." *Id.* ¶ 25.

Regarding claim 1, Petitioner argues that Boehm discloses (1) the recited short-range, high-speed wireless access point in the form of wireless access point 325; (2) the recited long-range, wireless Internet access interface in the form of interchangeable network interface 350; and (3) the recited LAN routing system in the form of router 330. Pet. 13. Petitioner also argues that Boehm discloses the recited stand-alone system without the need to access an external service controller server, because Boehm discloses "performing DHCP and network address translation locally rather than by requiring an external server accessible via a long-range network connection to do so." *Id.* at 13, 16. With respect to claim 2, Petitioner argues that Boehm discloses using 802.11b wireless communication technology. *Id.* at 16 (quoting Ex. 1005 ¶ 21).

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Patent Owner does not contest that Boehm fails to disclose any of the claim limitations, but argues that Boehm does not anticipate claims 1 and 2 because Boehm is not available as prior art. PO Resp. 11–39. For the reasons discussed above (*see supra* Section II.B.), however, we determine that Boehm is prior art with respect to claims 1 and 2 under 35 U.S.C. § 102(e).

After considering Petitioner’s and Patent Owner’s positions, as well as the supporting evidence, we are persuaded that Boehm discloses a mobile wireless hot spot system with the limitations of claims 1 and 2. In particular, we agree with Petitioner that Boehm’s system is a stand-alone system that provides Internet access without the need to access an external service controller server, because Boehm discloses that router 330 can “provide local DHCP service to the computers connected [thereto].” *See* Ex. 1005 ¶ 22. Accordingly, we determine that Petitioner has shown, by a preponderance of the evidence, that claims 1 and 2 are anticipated by Boehm.

*D. Asserted Obviousness of Claims 1, 3, 4, 7, and 18 over Mitchell and Boehm*

Petitioner challenges claims 1, 3, 4, 7, and 18 as unpatentable under 35 U.S.C. § 103 over Mitchell in view of Boehm and/or Kellerer. Pet. 3–4, 17–30. As such, this asserted ground actually sets forth three alternate grounds: (1) the combination of Mitchell and Boehm, (2) the combination of Mitchell and Kellerer, and (3) the combination of Mitchell, Boehm, and Kellerer. We instituted *inter partes* review on the ground based on the combination of Mitchell and Boehm, but not on the grounds based on the combinations of Mitchell and Kellerer or Mitchell, Boehm, and Kellerer. Dec. on Inst. 15.

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*1. Claim 1*

According to Petitioner, “Mitchell discloses “[a] communication system [that] is provided for use with a mobile platform.” Pet. 17 (citing Ex. 1005, Abstract). Petitioner contends that Mitchell discloses

a mobile wireless hotspot system that includes: (1) a short-range, high-speed wireless access point (i.e., wireless network between aircraft server and client personal computers); (2) a long-range, wireless Internet access interface (i.e., satellite link for receiving Internet data); and (3) a local area network (“LAN”) routing system (i.e., aircraft server for routing data between the Internet and the wireless network).

*Id.* at 18. Petitioner further contends that “[t]o the extent that Mitchell does not explicitly disclose that the mobile platform is a ‘stand-alone system,’ the modification of Mitchell to provide stand-alone functionality would have been obvious to one of ordinary skill in the art in view of the teachings of Boehm and/or Kellerer.” *Id.* More specifically, Petitioner argues that “Boehm clearly and explicitly discloses a stand-alone system that does not need to access an external service controller server.” *Id.* at 19, 25–26 (citing Ex. 1005 ¶¶ 20, 22). Petitioner concludes that Boehm’s “functionality of such a stand-alone system would be an obvious modification to the system disclosed in Mitchell” because applying this known improvement “to the base system disclosed in Mitchell . . . would provide results that were predictable to one of ordinary skill in the art.” *Id.* at 19 (citing Ex. 1010, 26).

Mitchell discloses aircraft satellite communication system 300 for distributing Internet service from direct broadcast satellites to a mobile platform embodied as an aircraft. Ex. 1006, 23:18–20, Fig. 12. Direct broadcast satellite (“DBS”) receiver system 260, on board aircraft 250,

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includes antenna 261 and Internet DBS receiver 364. *Id.* at 23:52–54, 57–58. Antenna 261 receives Internet service from satellite 340 via link 245, and the Internet service is processed by DBS receiver 364. *Id.* at 23:51–58, Fig. 12; *see also id.* at 19:64–67 (“The down converted L-band IF signal [from antenna 261] is sent to direct broadcast satellite receiver 264 for processing of the Internet service . . .”).

The Internet data from DBS receiver 364 are passed over serial data link 265 to aircraft network server 271, which is part of aircraft computer network 270. *Id.* at 23:61–63. Aircraft network server 271 distributes Internet service in aircraft 250—including client personal computer 272—via data link 273 or wireless network 275. *Id.* at 20:10–15, 23:64–66.

Patent Owner argues that the challenged claims are not obvious over the combination of Mitchell and Boehm because 1) Boehm is not available as prior art; and 2) the combination fails to make obvious certain features of the challenged claims. PO Resp. 39.

The first argument is not persuasive because we have determined that Boehm is prior art. *See supra* Section II.B. Regarding the second argument, Patent Owner asserts that Petitioner has failed to establish that Mitchell discloses the claimed long-range, wireless Internet access interface because “the devices in Mitchell’s system upon which Petitioner relies do not provide ‘Internet access’ at all.” PO Resp. 42 (citing Ex. 2004 ¶ 43.) According to Patent Owner, the structure in Mitchell cited by Petitioner (i.e., the link between satellite 340 and aircraft network server 271) does not provide Internet access because aircraft network server 271 receives, but does not send, Internet data. *Id.* at 42–43. This argument is not persuasive because it relies on Patent Owner’s incorrect interpretation of “Internet

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access” as requiring the ability to send and receive information. As noted above, however, we construe “Internet access” as “the ability to send and/or receive information via the Internet.” *See supra* Section II.A.2.

Next, Patent Owner argues that the combination of Mitchell and Boehm fails to disclose “a Local Area Network (LAN) routing system managing the data path between said wireless access point and said Internet access interface.” PO Resp. 44–46. In particular, Patent Owner asserts that Mitchell’s aircraft network server 271, which Petitioner identifies as the claimed LAN routing system, is a “server,” not a “routing system,” and “[s]ervers and routing systems are known and understood by those of ordinary skill in the art as different types of network devices that perform different functions.” *Id.* at 44 (citing Ex. 2004 ¶ 47). Patent Owner further asserts that “Ppetitioner has not established, however, that Mitchell’s aircraft network server 271 exerts control over access to the Internet by client devices, as through an authentication function,” and “Ppetitioner likewise has not established that Mitchell’s aircraft network server 271 controls access to the client devices from the Internet.” *Id.* at 45–46 (citing Ex. 2004 ¶¶ 51, 52).

This argument, however, relies on an overly narrow construction of the claim language. We have determined that the broadest reasonable interpretation of the phrase “a Local Area Network (LAN) routing system managing the data path between said wireless access point and said Internet access interface” is “a system that directs data between a local area network and the Internet by managing the data path between the wireless access point and the Internet access interface.” *See supra* Section II.A.1. Applying this interpretation, we agree with Petitioner that the terms “routing system” and

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“server” are not mutually exclusive. *See* Pet. Reply 12 (citing Ex. 1012 ¶¶ 53, 54). Mitchell’s aircraft network server 271 “distributes Internet service” in aircraft 250, including to client personal computer 252. Ex. 1006, 20:10–15. As such, aircraft network server 271 directs data between a local area network and the Internet. Furthermore, as argued by Petitioner (*see* Pet. Reply 12–13), aircraft network server 271 assigns client addresses to client computer 252 and identifies absent or corrupt files in the delivered Internet information. Ex. 1006, 20:28–31, 21:60–63.

Accordingly, we are persuaded that aircraft network server 271 manages the data path between the wireless access point and the Internet access interface.

Finally, Patent Owner asserts that Mitchell’s system is not a stand-alone system, as required by claim 1, because it requires back-channel 280 to send data to the Internet. PO Resp. 46–48. Patent Owner also asserts that Dr. Roy acknowledges that 1) “Mitchell teaches that the aircraft network server 271 is reliant upon a ground proxy server 294;” and 2) “according to Mitchell, client devices onboard the aircraft cannot communicate with the Internet without the ground proxy server 294 because of the management functions which it performs.” Mot. for Obs. 9–10 (citing Ex. 2038, 85:5–87:22, 88:16–89:1). Patent Owner argues that this testimony shows that the Mitchell system is not a stand-alone system “because it does not operate independently of the management functions performed by the ground proxy server 294” to access the Internet. *Id.* at 10. Patent Owner also argues that the combination of Mitchell and Boehm fails to render the stand-alone system of claim 1 obvious because, even if it were obvious to combine the references in the manner proposed by Petitioner, this modification “still

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would not change the fact that the Mitchell system requires a back-channel 280 in order to access the Internet.” PO Resp. 48–49 (citing Ex. 2004 ¶ 59).

In response, Petitioner argues that Mitchell’s system “can perform some operations independently, and thus is capable of operating independently of any other system.” Pet. Reply 13. Petitioner also asserts that Dr. Roy testifies that Mitchell’s back-channel 280 does not preclude Mitchell’s system from being a stand-alone system. *Id.* (citing Ex. 1012 ¶¶ 60, 63); Obs. Resp. 10.

Patent Owner’s arguments on this point are not persuasive. First, Dr. Roy’s testimony regarding Mitchell’s ground proxy server 294 is not instructive because ground proxy server 294 is included in the system shown in Figure 11 of Mitchell. Petitioner, however, relies on the system shown in Figure 12 of Mitchell, which does not include a ground proxy server. Second, we are persuaded by Petitioner’s evidence and arguments that back-channel 280 does not preclude Mitchell’s system from being a stand-alone system. Mitchell discloses that the system is suitable for “broadcast or push Internet use” without back-channel 280, but if “full active Internet is desired,” then some means of communication from the client computer, such as back-channel 280, is necessary. Ex. 1006, 20:16–23. Accordingly, based on our construction of “Internet access” (*see supra* Section II.A.2), we determine that Mitchell’s system can access the Internet without back-channel 280. Last, back-channel 280 is disclosed as part of Mitchell’s aircraft satellite communication system 300. Ex. 1006, 24:3–4, Fig. 12. As such, back-channel 280 is not external to the system and does not access an external service controller server.

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After considering Petitioner's and Patent Owner's positions, as well as the supporting evidence, we determine that Petitioner has shown, by a preponderance of the evidence, that claim 1 is unpatentable under 35 U.S.C. § 103(a) as obvious over the combination of Mitchell and Boehm.

2. *Claims 3, 4, 7, and 18*

Claims 3, 4, 7, and 18 each depend directly or indirectly from claim 1. Petitioner contends these claims are also unpatentable under 35 U.S.C. § 103 based on Mitchell and Boehm. Pet. 21–23, 26–30. In particular, Petitioner argues that Mitchell discloses the subject matter of these dependent claims. *Id.* We find these arguments persuasive.

Patent Owner does not present separate arguments against the unpatentability of claims 3, 4, 7, and 18, instead relying on these claims' dependence from claim 1 as the basis for their patentability. PO Resp. 49.

After considering Petitioner's and Patent Owner's positions, as well as the supporting evidence, we determine that Petitioner has shown, by a preponderance of the evidence, that claims 3, 4, 7, and 18 are unpatentable under 35 U.S.C. § 103(a) as obvious over the combination of Mitchell and Boehm.

E. *Asserted Obviousness of Claims 1–4 and 18 over Veeck, Boehm, and Mitchell*

Petitioner challenges claims 1–4 and 18 as unpatentable under 35 U.S.C. § 103 over Veeck in view of Kellerer, Boehm, and/or Mitchell.<sup>3</sup>

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<sup>3</sup> The Petition is inconsistent with respect to whether Petitioner is challenging claims 1–4 and 18 as unpatentable over Veeck in view of Kellerer or Mitchell (*see* Pet. 4) or over Veeck in view of Kellerer, Boehm, and/or Mitchell (*see id.* at 47). In this Final Written Decision, we treat the Petition as challenging claims 1–4 and 18 as unpatentable over Veeck in view of Kellerer, Boehm, and/or Mitchell.

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Pet. 3–4, 47–59. This asserted ground presents a number of different grounds based on several possible combinations of references. Of these various grounds, we instituted *inter partes* review only on the ground based on the combination of Veeck, Boehm, and Mitchell. Dec. on Inst. 19.

*1. Claim 1*

Petitioner contends that Veeck discloses

a mobile wireless hotspot system that includes: (1) a short-range, high-speed wireless access point (i.e., a wireless LAN access point in communication with passenger devices); (2) a long-range Internet access interface (i.e., service provider communications device in communication with the Internet); and (3) a local area network (“LAN”) routing system (i.e., a data server that communicates data between the wireless LAN access point and the service provider communications device).

Pet. 49. Petitioner argues that, although Veeck does not disclose explicitly that its long-range Internet access interface is *wireless*, the use of a wireless Internet access interface “is implied by Veeck’s disclosure that the wireless data management system can be utilized on vehicles such as aircraft, buses, ships, and trains.” *Id.* Petitioner relies on the Roy Declaration, which states that such vehicles would require a wireless long-range Internet access interface, to support this argument. *Id.* (citing Ex. 1010, 64).

Petitioner further contends that

[t]o the extent that Veeck does not disclose explicitly disclose that the mobile platform is . . . a “stand-alone system” that does not need to access “an external service controller server,” the modification of Veeck to provide such stand-alone functionality would be an obvious modification to one of ordinary skill in the art in view of the teachings of Kellerer and/or Boehm.

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*Id.* at 51–52. More specifically, Petitioner argues that “Boehm clearly and explicitly discloses a stand-alone system that does not need to access an external service controller server.” *Id.* at 53. Petitioner concludes that applying Boehm’s known improvement “to the base system disclosed in Veeck . . . would provide results that were predictable to one of ordinary skill in the art.” *Id.* at 53 (citing Ex. 1010, 67).

Veeck discloses a “wireless communication system for a transportation vehicle such as, for example, an aircraft, bus, cruise ship, and train.” Ex. 1008, Abstract. Figure 2 of Veeck, reproduced below, illustrates wireless data management system 12.

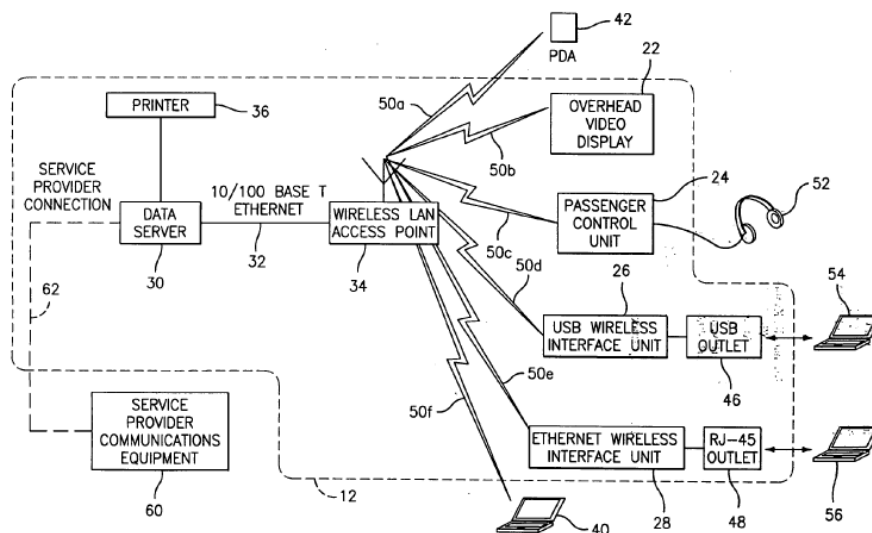


Figure 2 depicts Veeck’s wireless data management system 12.

Wireless data management system 12 distributes data, including Internet data, to passenger devices within the cabin of a transportation vehicle. *Id.* ¶¶ 22, 23. System 12 includes data server 30 coupled to wireless local area network (“WLAN”) access point 34 through serial or parallel communication connection 32. *Id.* ¶ 24. In addition, data server 30 is coupled to external service provider communications device 60 over serial

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or parallel interface 62. *Id.* ¶ 27. External service provider communications device 60 may be coupled to a global communications network, such as the Internet, so that data server 30 may access data content available to communications device 60 from anywhere in the world. *Id.*

Veeck also discloses that WLAN access point 34 transmits data content to wireless components within a vehicle cabin. *Id.* ¶ 25. Such wireless components include “passenger personal computing devices . . . having compliant wireless interfaces such as, for example, wireless-enabled laptops 40.” *Id.*

Patent Owner argues that the challenged claims are not obvious over the combination of Veeck, Boehm, and Mitchell because 1) Boehm is not available as prior art; and 2) the combination “fails to make obvious the ‘routing system’ and the ‘stand-alone system’ features of [the challenged] claims.” PO Resp. 49.

The first argument is not persuasive because we have determined that Boehm is prior art. *See supra* Section II.B. Regarding the second argument, Patent Owner asserts that Petitioner has failed to establish that Veeck’s data server 30 is a “routing system,” as required by claim 1. PO Resp. 51 (citing Ex. 2004 ¶ 65). Patent Owner asserts that data server 30 is “a server, not a ‘routing system,’” and “a person of ordinary skill in the art would not have understood it as a ‘routing system,’ as those terms are recognized in the art as different types of network devices that perform different functions.” *Id.* at 51–52 (citing Ex. 2004 ¶ 66). Patent Owner also argues that

Petitioner has not shown that Veeck’s data server 30 controls access to the client devices from the Internet. Veeck discloses only that the data server 30 is for “distributing” Internet data to the client devices (Ex. 1008

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¶ [0027]), but this would be understood simply as communicating data between the client devices and the Internet access interface.

*Id.* at 52–53 (citing Ex. 2004 ¶ 69).

This argument, however, relies on an overly narrow construction of the claim language. We have determined that the broadest reasonable interpretation of the phrase “a Local Area Network (LAN) routing system managing the data path between said wireless access point and said Internet access interface” is “a system that directs data between a local area network and the Internet by managing the data path between the wireless access point and the Internet access interface.” *See supra* Section II.A.1. Veeck’s data server 30 accesses data content from service provider communications device 60 and transmits data to WLAN access point 34. Ex. 1008 ¶¶ 27, 29, 30. As such, data server 30 directs data between a local area network and the Internet. Furthermore, we are persuaded by Petitioner’s argument that data server 30 “can control clients’ Internet access by distinguishing between different client devices when communicating content.” *See* Pet. Reply 14 (citing Ex. 1008 ¶ 27). Accordingly, we are persuaded that data server 30 manages the data path between the wireless access point and the Internet access interface.

Patent Owner asserts that “Veeck explicitly teaches that the system is *not* a ‘stand-alone system.’” PO Resp. 53–54 (citing Ex. 2004 ¶ 70). Patent Owner argues that Veeck simply discloses that “external service provider communications device 60 may, in turn, be coupled to a global communications network such as, for example, the Internet,” without providing any further details on this connection. *Id.* at 54 (citing Ex. 1008 ¶ 27). Patent Owner argues that Veeck incorporated U.S. Patent No.

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6,249,913 (“Galipeau”) by reference “in order to provide such details.” *Id.* (citing Ex. 1008 ¶ 3). Patent Owner then analyzes Galipeau and concludes that “[t]he reliance of the Veeck/Galipeau system on the ground server 232 for managing communications with the Internet means that the system is not a ‘stand-alone system that enables client devices . . . to access the Internet.’” *Id.* at 56 (citing Ex. 2004 ¶ 75).

We find this argument unpersuasive and agree with Petitioner that “Veeck’s Internet communication architecture is not limited by Galipeau.” *See* Pet. Reply 15. In particular, although Veeck incorporates Galipeau by reference, Patent Owner does not direct us to any mention in Veeck that Galipeau is relied on for disclosing how external service provider communications device 60 is coupled to the Internet. We also are not persuaded by Patent Owner’s assertion that Dr. Roy’s testimony regarding Veeck’s disclosure of how external service provider communications device 60 is coupled to the Internet shows Veeck is reliant upon Galipeau. Mot. for Obs. 10–11 (citing Ex. 2038, 92:8–21, 93:6–17, 95:19–96:11). Instead, we are persuaded by Petitioner’s argument (described above) that the use of a wireless Internet access interface “is implied by Veeck’s disclosure that the wireless data management system can be utilized on vehicles such as aircraft, buses, ships, and trains.” *See* Pet. 49 (citing Ex. 1010, 64).

After considering Petitioner’s and Patent Owner’s positions, as well as the supporting evidence, we determine that Petitioner has shown, by a preponderance of the evidence, that claim 1 is unpatentable under 35 U.S.C. § 103(a) as obvious over the combination of Veeck, Boehm, and Mitchell.

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2. *Claims 2–4 and 18*

Claims 2–4 and 18 each depend from claim 1. Petitioner contends these claims are also unpatentable under 35 U.S.C. § 103 based on Veeck, Boehm, and Mitchell. Pet. 53–54, 58–59. In particular, Petitioner argues that Veeck discloses the subject matter of claims 2–4. *Id.* at 58–59. Regarding claim 18, Petitioner argues “it would have been obvious to modify Veeck to include a manager for monitoring a WAN connection of the WAN Interface in order to provide a continuous connection to the Internet, for the same reasons discussed above, as disclosed in . . . Mitchell (pp. 21-22; Exh. 1010, p. 29-30).” *Id.* at 53–54. We are persuaded by these arguments.

Patent Owner does not present separate arguments against the unpatentability of claims 2–4 and 18, instead relying on these claims’ dependence from claim 1 as the basis for their patentability. PO Resp. 57–58.

After considering Petitioner’s and Patent Owner’s positions, as well as the supporting evidence, we determine that Petitioner has shown, by a preponderance of the evidence, that claims 2–4 and 18 are unpatentable under 35 U.S.C. § 103(a) as obvious over the combination of Veeck, Boehm, and Mitchell.

F. *Real Parties-in-Interest*

The Petition, in its real party-in-interest section, identified Google Inc. as owning “more than a 10% ownership of [Petitioner].” Pet. 1. In the Decision on Institution, we determined that the Petition sufficiently identified all real parties-in-interest pursuant to 35 U.S.C. § 312(a)(2). Dec. 8. Patent Owner argues that the Decision on Institution relies on a

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legally incorrect interpretation of the statute. PO Resp. 58. In its Response, Patent Owner presents no substantially new arguments that require revisiting our determination regarding identification of real parties-in-interest. We, therefore, decline to dismiss the Petition for the same reasons given in the Decision on Institution.

*G. Petitioner's Motion to Exclude*

Petitioner moves to exclude Exhibits 2035–2037, which purport to be printouts from <https://support.microsoft.com>, because they “are not relevant to any issue in this proceeding and are not properly authenticated.” Mot. to Exclude 1. Petitioner also moves to exclude any portions of Exhibit 2038 that reference Exhibits 2035–2037. *Id.*

Petitioner contends that Exhibits 2035–2037 should be excluded as irrelevant under Federal Rule of Evidence 402 because they “lack any description of the mobile hotspot as described in [the ’771 patent] or the hotspot described in other evidence presented by the Patent Owner in this proceeding” and, thus, “lack any probative value regarding the use of Windows 98 in the mobile hotspot as conceived by the patentees.” *Id.* at 4. Petitioner also contends that Exhibits 2035–2037 are irrelevant because they purport to describe features of Windows 98 that existed as of 2007 rather than as of the relevant time period of September 2002, when the mobile hotspot was allegedly conceived. *Id.* at 7.

In addition, Petitioner contends that Exhibits 2035–2037 should be excluded under Federal Rule of Evidence 901 as lacking proper authentication. *Id.* at 8–9. Specifically, Petitioner argues that “Patent Owner has failed to authenticate Exhibits 2035–2037” because “[n]o testimony has been presented from any individual with knowledge of

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<https://support.microsoft.com>, the website from which these Exhibits were allegedly printed.” *Id.* at 9.

Initially, Patent Owner asserts that the Motion to Exclude should be denied because Petitioner did not properly preserve its relevance and authentication objections during the deposition of Dr. Roy. Opp. to Mot. to Exclude 4–5. Patent Owner argues that the objections made by Petitioner’s counsel during the deposition did not mention, and were not remotely related to, relevance or authentication. *Id.* at 5. Therefore, according to Patent Owner, “Petitioner’s counsel’s comments are inadequate to preserve objections for lack of relevance and authentication.” *Id.* (citing 37 C.F.R. § 42.53(f)(4), (8)). Petitioner responds that

Petitioner’s counsel noted that the documents were “outside the scope of . . . this proceeding.” Ex. 2038, 45:11–12. A document *outside the scope* of a proceeding is irrelevant to any issue in the proceeding. Petitioner’s counsel also noted that no witness (including Dr. Roy) had reviewed the exhibits. *See* Ex. 2038, 45:14–15. The ability to review a document impacts whether a witness can testify to its authenticity. Thus, the objections included sufficient detail to notify Patent Owner that supplemental evidence of relevance and authentication was needed.

Pet. Reply to Mot. to Exclude 1.

Patent Owner also argues that Exhibits 2035–2037 and Dr. Roy’s related testimony are relevant because “1) [t]hey rebut Petitioner’s arguments and provide further corroboration for Patent Owner’s already un rebutted evidence that Windows 98 included tools for providing Dynamic Host Configuration Protocol (DHCP) and network address translation (NAT) functionality; and 2) [t]hey are pertinent to the reliability of the opinions of Petitioner’s expert, Dr. Roy.” Opp. to Mot. to Exclude 5–6.

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In response, Petitioner asserts that Exhibits 2035–2037 do not describe any feature of the patentees’ mobile hotspot system, and Exhibit 2036 relates to Windows 98 *Second Edition* but there is no evidence of record that the patentees’ mobile hotspot system used Windows 98 Second Edition. Pet. Reply to Mot. to Exclude 1–2. Petitioner disputes that Dr. Roy’s alleged unfamiliarity with Microsoft Windows 98 is relevant to the reliability of his opinions because “Dr. Roy’s knowledge of Windows 98 is not the disputed issue.” *Id.* at 3. Also, Petitioner reiterates its assertion that Exhibits 2035–2037 describe features of Windows 98 that existed as of 2007 rather than 2002. *Id.* at 4.

In response to Petitioner’s contention that Exhibits 2035–2037 lack proper authentication, Patent Owner argues that the Exhibits are authenticated under Federal Rules of Evidence 901(b)(4) and 902(7) because each Exhibit “includes numerous distinctive characteristics and trade inscriptions that sufficiently authenticate the documents,” such as the registered trademark MICROSOFT, the Microsoft logo, and a Microsoft Internet address. Opp. to Mot. to Exclude 10–11. Patent Owner also argues that the Board has noted “that ‘[t]here is a strong public policy for making all information filed in a quasi-judicial administrative proceeding available to the public, especially in an *inter partes* review, which determines the patentability of a claim in an issued patent.’” *Id.* at 13 (quoting *EMC Corp. v. Personalweb Techs., LLC*, Case IPR2013-00084, slip op. 44–45 (PTAB May 15, 2014) (Paper 64)). In addition, Patent Owner points to the Declaration of Derek R. Bayles (Ex. 2039, the “Bayles Declaration”) as further authenticating Exhibits 2035–2037.

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We are not persuaded by Patent Owner's assertion that Petitioner failed to properly preserve its relevance and authentication objections during the deposition of Dr. Roy. The rules governing *inter partes* review do not require that an objection be *preserved* during a deposition. Although an objection to evidence submitted during a deposition must be *made* during the deposition, 37 C.F.R. § 42.64(a), an objection must be *preserved* by timely filing a motion to exclude, 37 C.F.R. §§ 42.53(f)(8), 42.64(c).

In this case, Petitioner asserts, and Patent Owner does not contest, that Patent Owner served Exhibits 2035–2037 during the deposition of Dr. Roy and did not notify Petitioner of its intent to introduce these Exhibits prior to the deposition. Mot. to Exclude 2. Under such circumstances, it would have been unfair to expect Petitioner to provide the basis of its objection during the deposition with a high degree of particularity.<sup>4</sup> Accordingly, we agree with Petitioner that the objections regarding Exhibits 2035–2037 made during the deposition of Dr. Roy “included sufficient detail to notify Patent Owner that supplemental evidence of relevance and authentication was needed.” *See* Pet. Reply to Mot. to Exclude 1. We thus determine that Petitioner properly preserved its objections to Exhibits 2035–2037.

Nevertheless, even when we consider Exhibits 2035–2037 (*see supra* Section II.B.3), or any portions of Exhibit 2038 that reference Exhibits 2035–2037, we determine that they do not provide sufficient corroboration of conception. Accordingly, because we are in agreement with Petitioner's

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<sup>4</sup> Contrary to § 42.64(b)(1), which involves objections to evidence submitted during a preliminary proceeding or once a trial has been instituted (i.e., evidence other than deposition evidence), § 42.64(a) does not specify a level of particularity with which an objection made during deposition must be made.

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position on this issue for the reasons set forth above, even when considering the evidence that Petitioner seeks to exclude, Petitioner's Motion to Exclude is *dismissed* as moot.

### III. CONCLUSION

Petitioner has shown, by a preponderance of the evidence, that claims 1 and 2 of the '771 patent are unpatentable under 35 U.S.C. § 102(e) as anticipated by Boehm.

Petitioner has shown, by a preponderance of the evidence, that claims 1, 3, 4, 7, and 18 of the '771 patent are unpatentable under 35 U.S.C. § 103 as obvious over the combination of Mitchell and Boehm.

Petitioner has shown, by a preponderance of the evidence, that claims 1–4 and 18 of the '771 patent are unpatentable under 35 U.S.C. § 103 as obvious over the combination of Veeck, Boehm, and Mitchell.

### IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that claims 1–4 and 18 of the '771 patent are determined to be *unpatentable*;

FURTHER ORDERED that Petitioner's Motion to Exclude is *dismissed*; and

FURTHER ORDERED that, because this is a Final Written Decision, parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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Patent 7,382,771 B2

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Paper 47  
Entered: September 10, 2015

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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MOTOROLA MOBILITY LLC,  
Petitioner,

v.

INTELLECTUAL VENTURES II LLC,  
Patent Owner.

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Case IPR2014-00504  
Patent 7,382,771 B2

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Before MICHAEL W. KIM, PATRICK R. SCANLON, and  
KRISTINA M. KALAN, *Administrative Patent Judges*.

SCANLON, *Administrative Patent Judge*.

ERRATA

This paper amends the Final Written Decision, entered September 9, 2015 (Paper 46), to correct an error occurring therein. Namely, the passage “ORDERED that claims 1–4 and 18 of the ’771 patent are determined to be *unpatentable*” on page 39 is changed to “ORDERED that claims 1–4, 7, and 18 of the ’771 patent are determined to be

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*unpatentable.*” In all other respects, the Final Written Decision is unchanged.

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(12) **United States Patent**  
**Leblanc et al.**

(10) **Patent No.:** **US 7,382,771 B2**  
(45) **Date of Patent:** **Jun. 3, 2008**

(54) **MOBILE WIRELESS HOTSPOT SYSTEM**

(56) **References Cited**

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(73) Assignee: **In Motion Technology, Inc.** (CA)

(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 1034 days.

(21) Appl. No.: **10/386,691**

(22) Filed: **Mar. 13, 2003**

(65) **Prior Publication Data**

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(51) **Int. Cl.**

**H04L 12/66** (2006.01)

**H04Q 7/24** (2006.01)

**H04Q 7/00** (2006.01)

(52) **U.S. Cl.** ..... **370/352; 370/338; 370/328**

(58) **Field of Classification Search** ..... **370/352, 370/338, 328**

See application file for complete search history.

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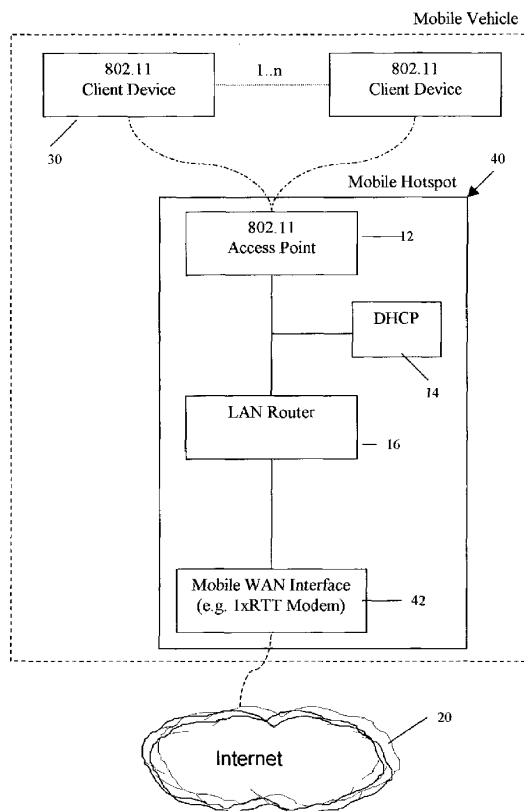
*Primary Examiner*—William J Deane

(74) *Attorney, Agent, or Firm*—Vermette & Co.; Clifford W. Vermette; Denis R. O'Brien

(57) **ABSTRACT**

The invention relates to wireless Internet access points, and in particular to providing a mobile wireless access point for use with high-speed wireless devices. In particular, the system allows client devices configured for short-range, high-speed wireless Internet access to use said system to access the Internet while in a mobile environment, such as a passenger vehicle.

**19 Claims, 10 Drawing Sheets**

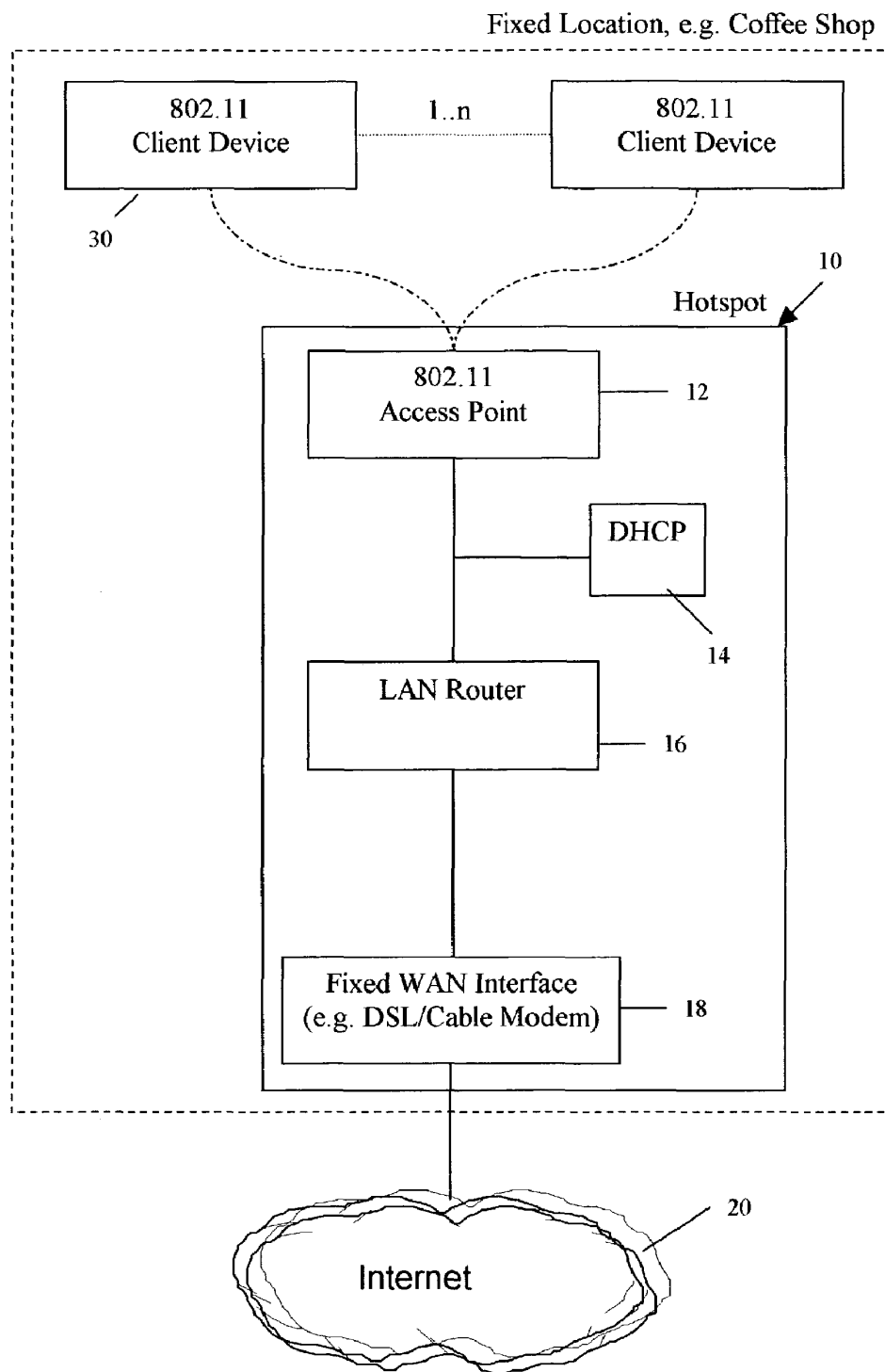


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**Figure 1**

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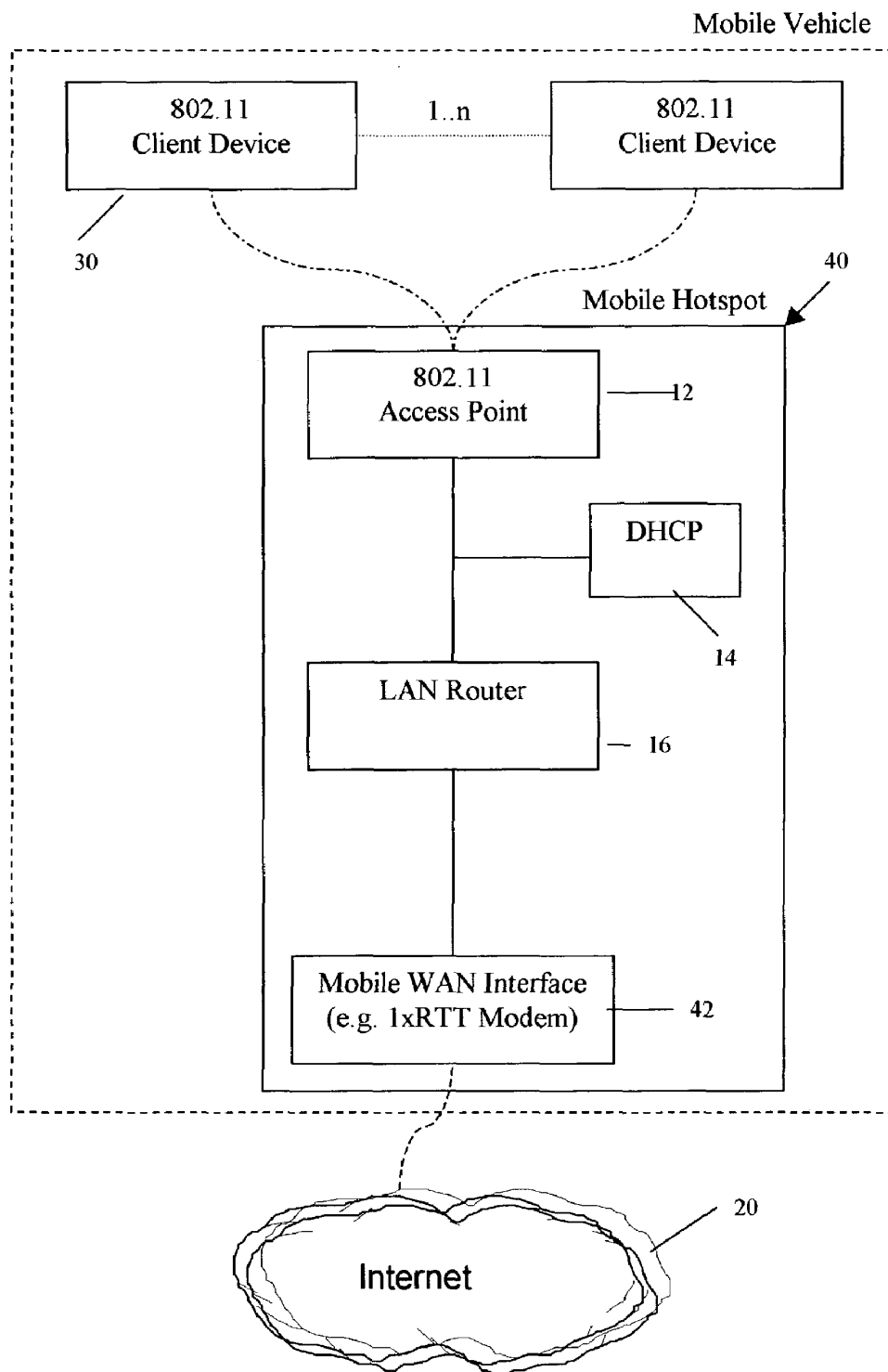


Figure 2

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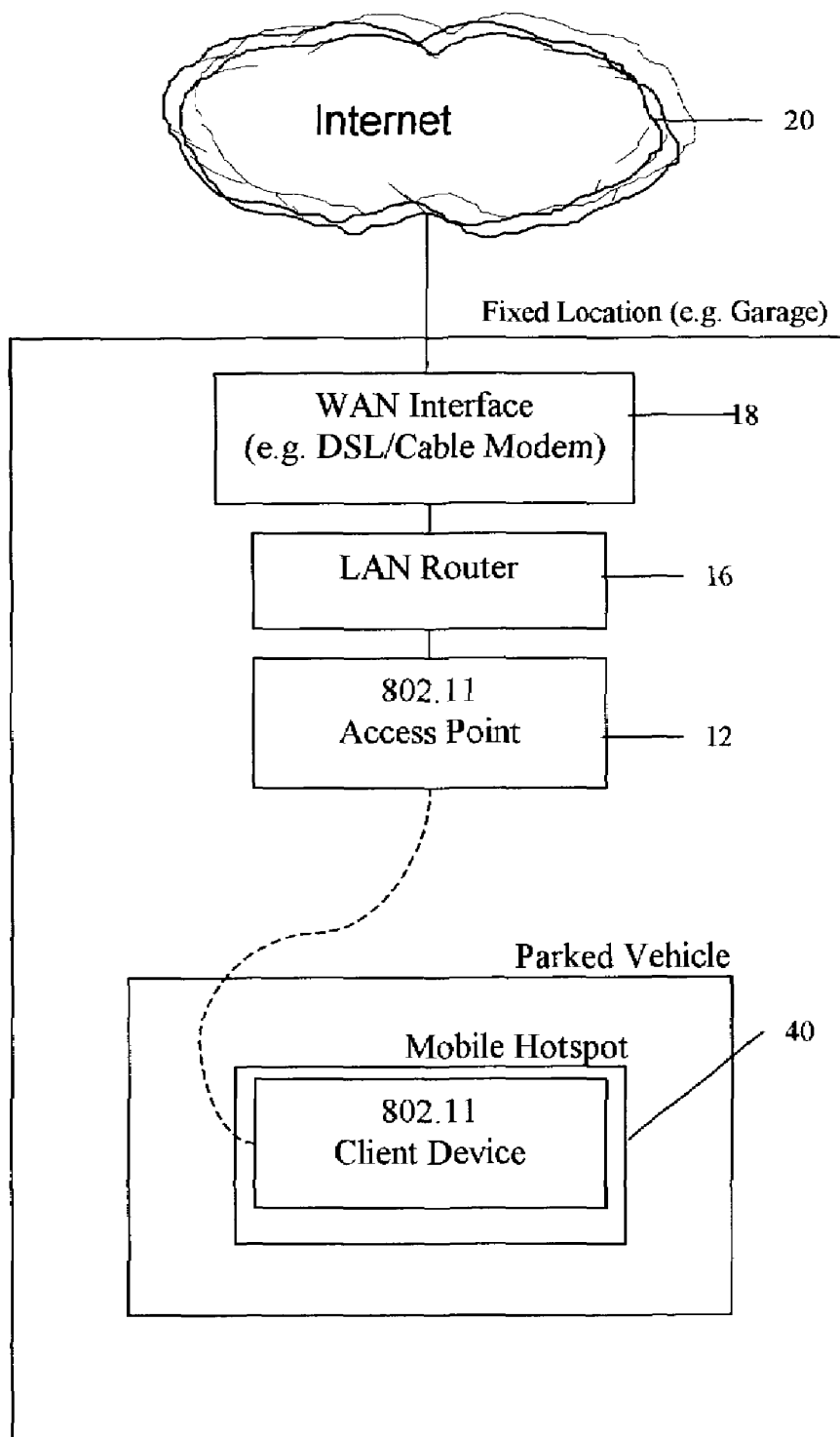


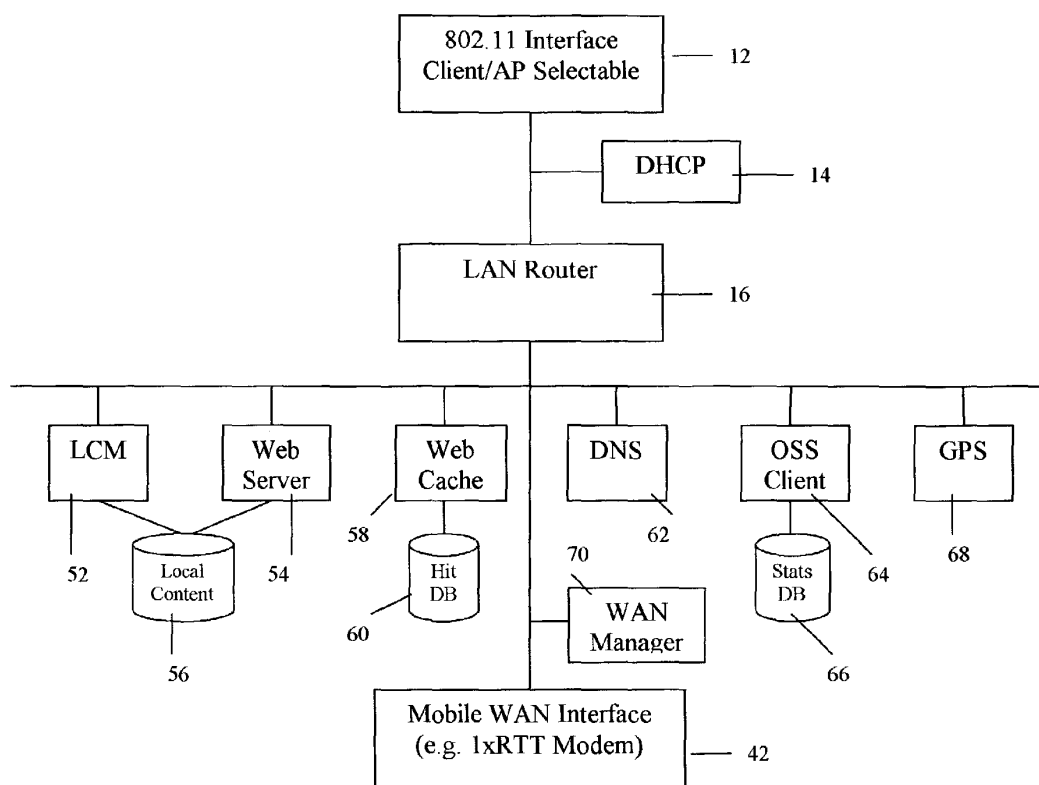
Figure 3

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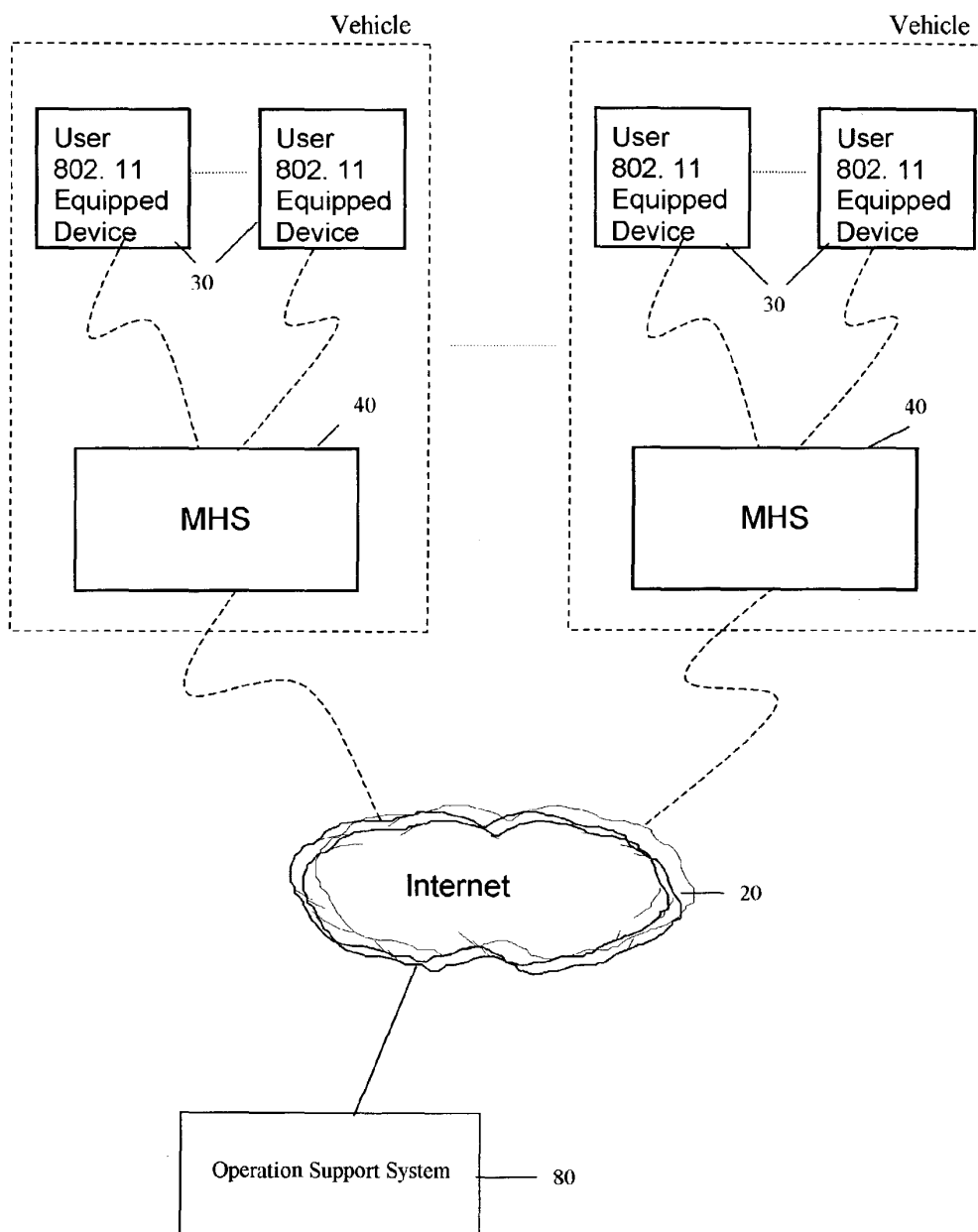
**Figure 4**

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**Figure 5**

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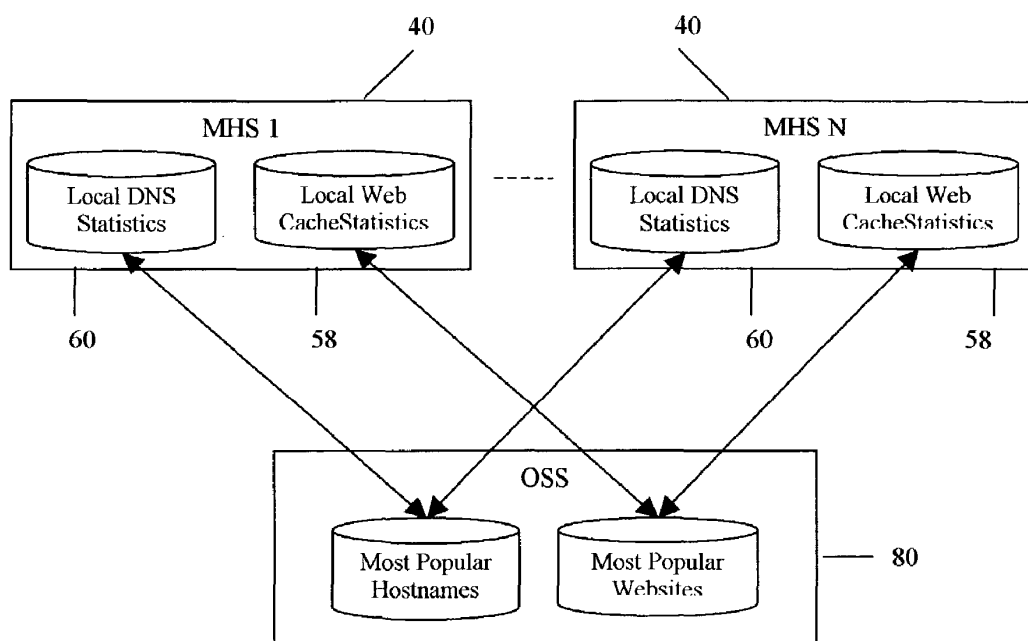


Figure 6

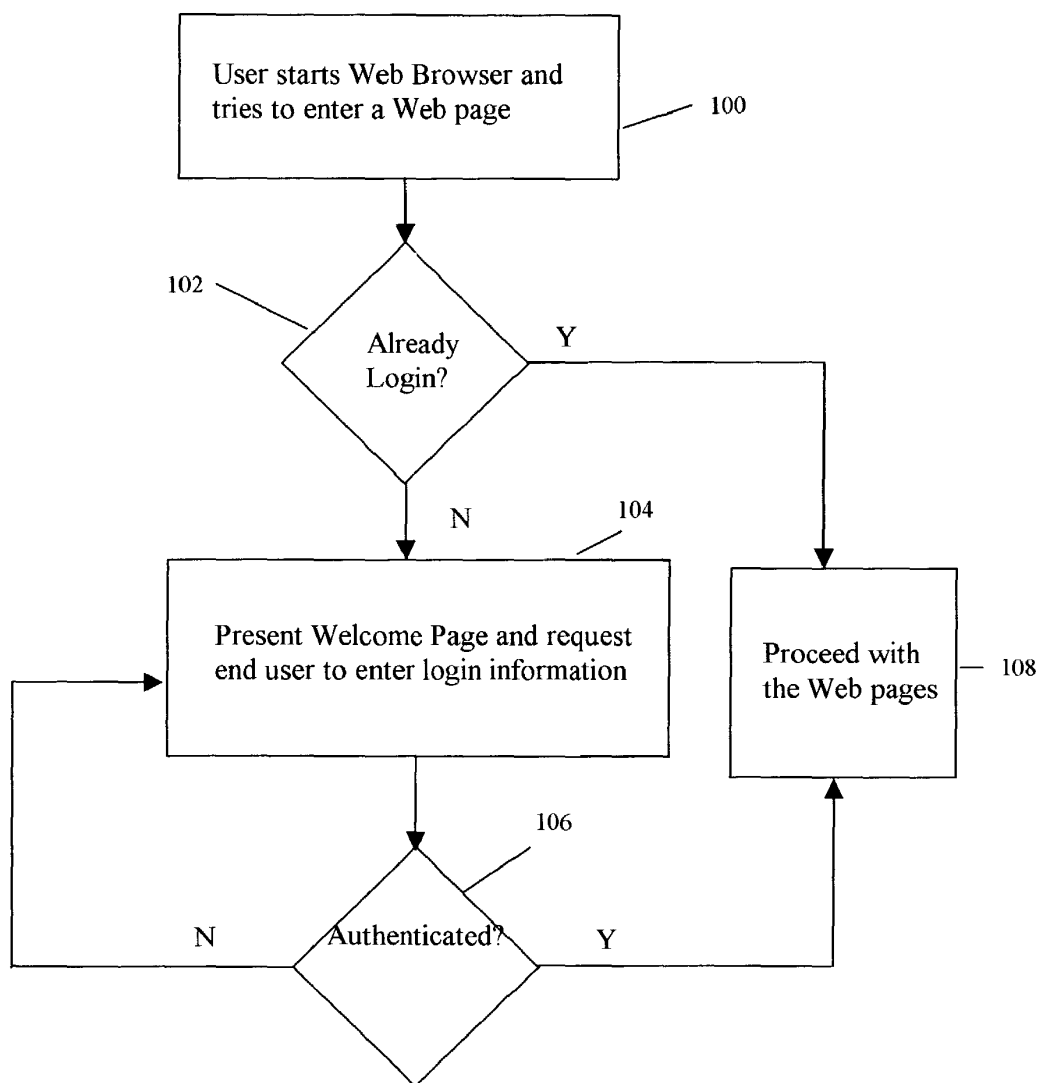


Figure 7

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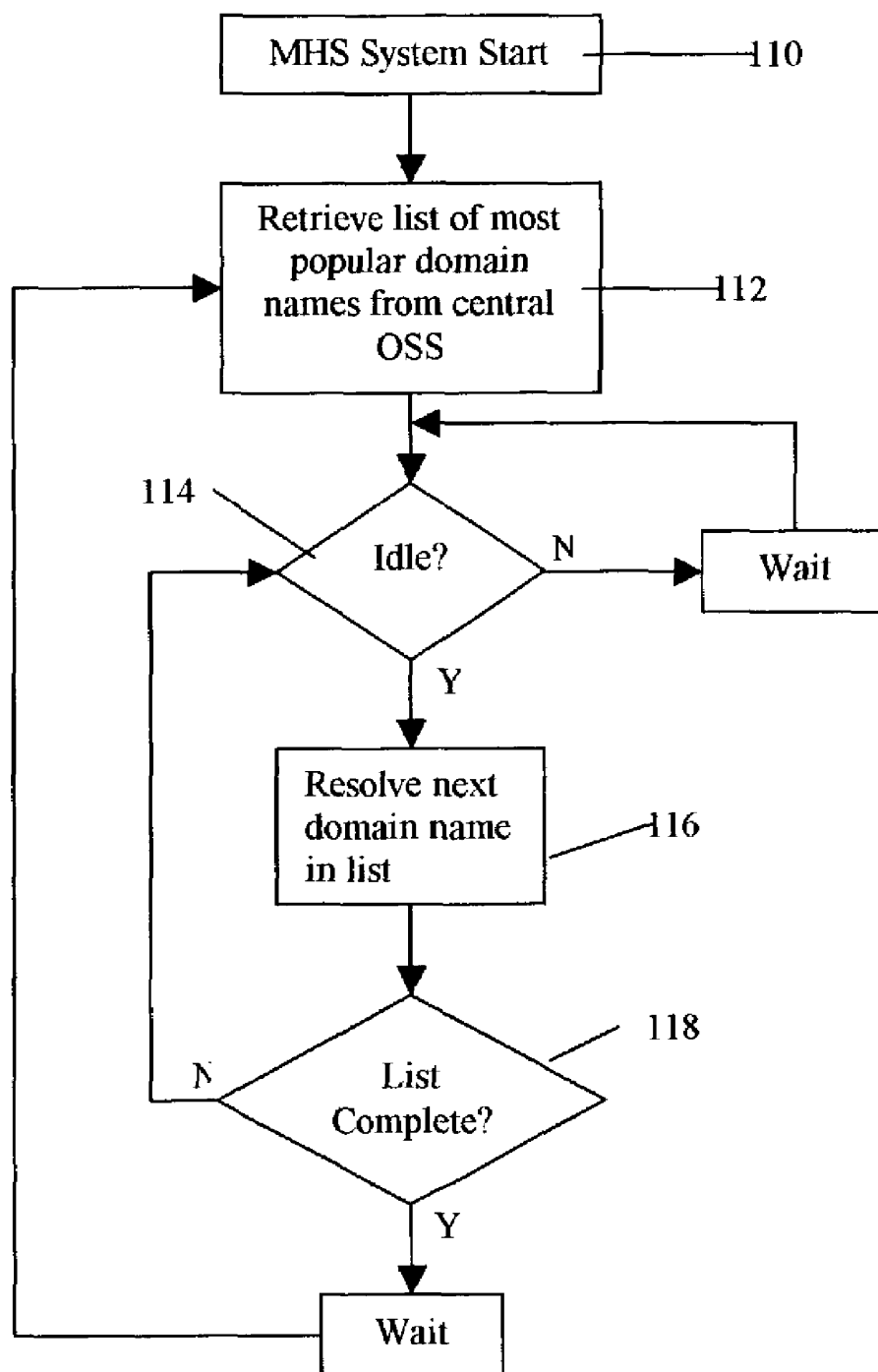


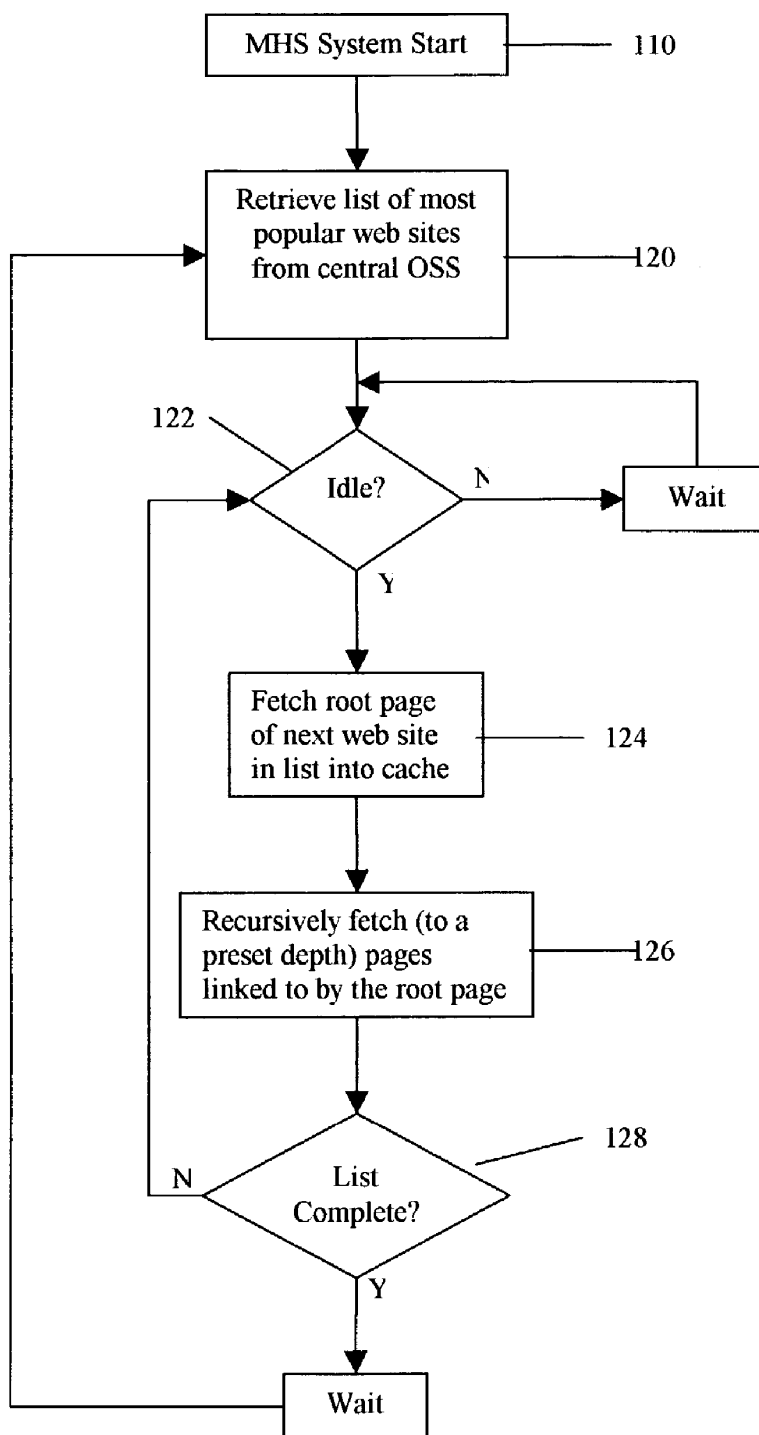
Figure 8

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**Figure 9**

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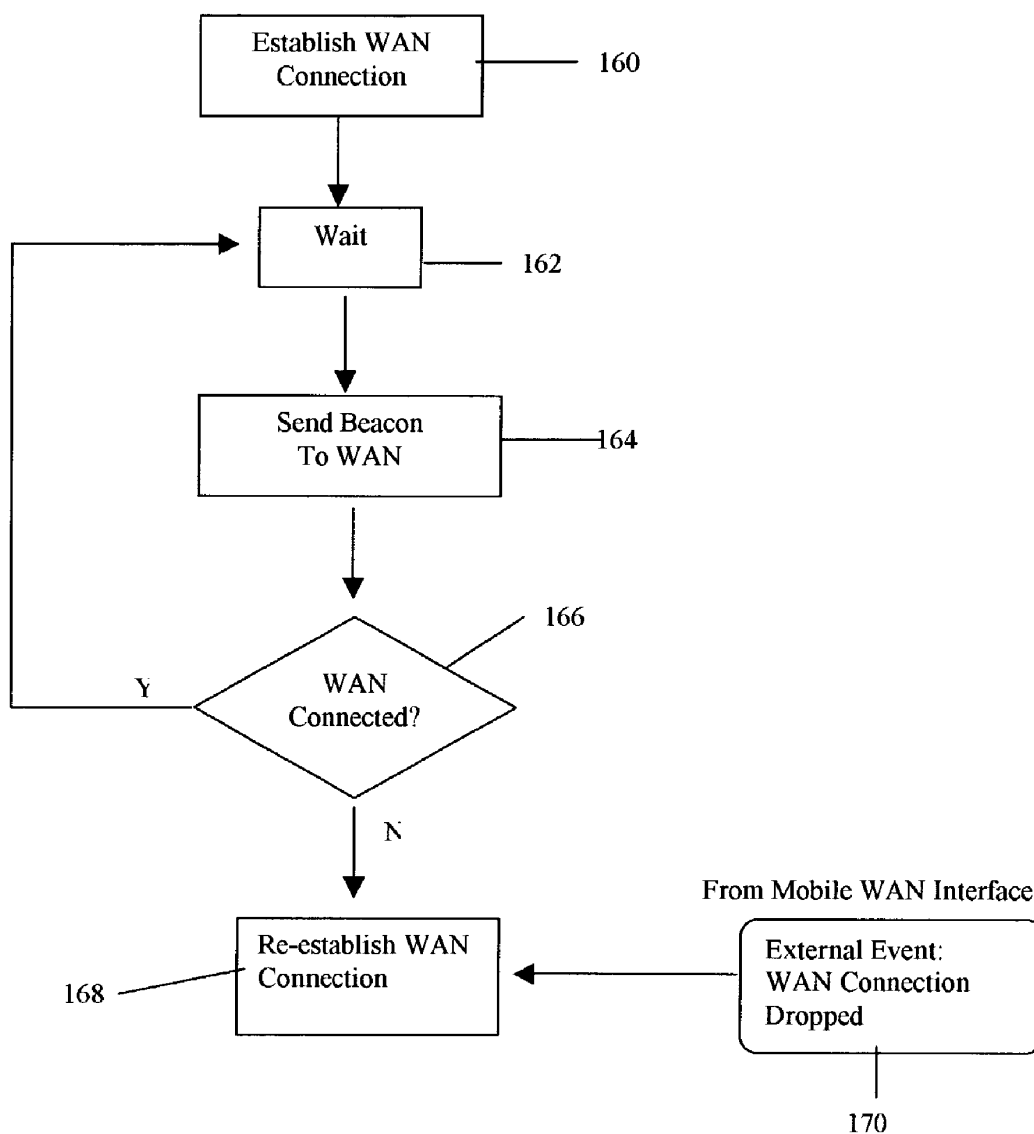


Figure 10

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**MOBILE WIRELESS HOTSPOT SYSTEM****FIELD OF INVENTION**

The invention relates to wireless Internet access points, and in particular to providing a mobile wireless access point for use with high-speed wireless devices.

**BACKGROUND OF INVENTION**

Telecommunications technology has advanced dramatically in recent history. The era of cost effective mobile data connectivity, "anytime, anywhere" is rapidly approaching. With the growing popularity of the Internet and increasing mobility demands from end users, there has recently been increased interest in wireless public Internet access.

Public Internet access (e.g. Internet Café) has been around for many years. In the last couple of years, a new wireless data technology based on the IEEE 802.11 standard has been gaining momentum. Of particular interest is the deployment of 802.11-based access points—so called "Hotspots"—in public spaces, e.g. coffee shops, hotels, conference centers, and airports. Users with client devices such as laptops and personal digital assistants (PDAs) use an 802.11 network interface card that enables them to connect to the Internet without any physical cables. Once an association is established with the Wireless LAN (WLAN) Access Point (AP) or Hotspot, the user is able to surf the Internet as if they were on a LAN.

The existing Hotspots provide good Internet connectivity. The major challenge with this type of wireless solution is coverage. The 802.11 standard makes use of an unlicensed frequency spectrum and is therefore limited to low power transmissions. As a result, a typical Hotspot has a range of no more than 150 feet indoors and 1000 feet outdoors under ideal conditions. Even with large companies such as T-Mobile planning to install thousands of these Hotspots in the coming years, it will be very difficult to achieve sufficient coverage throughout a city to satisfy a large population of mobile workers.

To address the need for wide area wireless coverage, many cellular operators have been deploying new generation (known as 2.5G or 3G) wireless data networks. For example, the PCS Vision network from Sprint PCS is already providing substantially improved performance over previous generations of wireless technology. With speeds averaging 50-70 kbps and peaking at 144 kbps the PCS Vision network is much slower than its 802.11 counterpart but has the advantage of a large coverage area and support for vehicular mobility (e.g. 0-300 km/h). 3G networks provide a service that is closer to the "anytime, anywhere" objective.

There are drawbacks with 3G networks, chief among them being cost. 3G interface cards are expensive and so are the associated service plans. There are also several competing and evolving standards (1xEV-DO, 1xEV-DV, GPRS, EDGE, etc.). A given interface card typically supports only one of these standards, the consumer is faced with a difficult decision, compounded by the knowledge he will likely have to upgrade to yet another expensive option within 18-36 months. High cost, confusing choices and poor performance relative to home Internet services such as DSL and cable modems all inhibit the wide acceptance of 3G.

Today, ground transportation is a part of nearly everyone's life. Be it airport transfers, customer visits, or daily commuting, more and more of the workforce is becoming mobile. Mobile workers are continually looking for cost effective solutions that allow them to stay in touch with their

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customers, co-workers, suppliers and shareholders electronically using standard computer equipment while "stuck" in transit using public transportation including limousines, taxis, buses, ferries or trains.

It is an object of this invention to provide a mobile wireless hotspot that allows client devices equipped with short-range wireless Internet capability (e.g. 802.11) to access the Internet from a mobile vehicle through a long-range wireless Internet system (e.g. a 3G network).

**SUMMARY OF INVENTION**

The present invention integrates a short-range wireless Hotspot, such as an 802.11-compatible hotspot, with the mobility of long-range wireless networks, such as 3G into a Mobile Hotspot System (MHS). The MHS includes a short-range wireless (WLAN) access point, a long-range wireless (WAN) Internet interface, and a Local Area Network (LAN) router to handle communications and features of the MHS.

The MHS provides wireless Internet connectivity to an end user with a client device configured for short-range wireless Internet access while in a mobile environment, such as a limousine.

The LAN router may further include transparent in-line data caching to improve an end user surfing experience and optimize access to popular web sites. This caching may also include pre-loading domain name service (DNS) results at system boot time to optimize host name lookups.

The MHS may further include a wireless WAN connection manager to monitor the state of the WAN connection and re-establishes it when necessary to ensure continuous Internet connectivity.

The MHS can also include content stored locally on the MHS instead of being retrieved over the WAN Internet connection. Such content can be retrieved by the user much faster than via the WAN. Such content may include, but not be limited to, advertising, local tourist information, and audio/video entertainment. The local content can be tailored to the user based on demographic information obtained directly or indirectly (e.g. by monitoring activity) from the user.

The MHS can include an integrated Operations Support System (OSS) for use with multiple MHS units. The OSS provides proactive monitoring and control of all deployed MHS units via the Internet. The MHS cache systems can be further optimized based on overall usage statistics collected by the OSS from all deployed MHS units.

The invention additionally includes a method of providing a mobile wireless hotspot by installing a mobile wireless hotspot system as described above into a vehicle for use by client devices in the vehicle. The method may also using an OSS to coordinate and share information between multiple mobile hotspots.

**BRIEF DESCRIPTION OF THE DRAWINGS**

The invention itself both as to organization and method of operation, as well as additional objects and advantages thereof, will become readily apparent from the following detailed description when read in connection with the accompanying drawings:

FIG. 1 is an architecture diagram of a typical prior art wireless 802.11 Hotspot;

FIG. 2 is an architecture diagram for a Mobile Hotspot System (MHS) according to the present invention;

FIG. 3 is an architecture diagram of an MHS accessing a local fixed Hotspot;

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FIG. 4 is a functional block diagram of an MHS;

FIG. 5 is an architecture drawing of a distributed MHS system including multiple MHS units and a central Operations Support System (OSS);

FIG. 6 is a block diagram illustrating the principles of aggregate web and DNS caching in an MHS;

FIG. 7 is a logic diagram illustrating the process of authenticating the end user for the MHS;

FIG. 8 is a logic diagram illustrating the process of pre-loading the DNS cache in the MHS based on aggregate popularity statistics from all MHS units;

FIG. 9 is a logic diagram illustrating the process of pre-loading the Web Cache in the MHS based on aggregate popularity statistics from all MHS units;

FIG. 10 is a logic diagram illustrating the WAN beacon process of the WAN Manager.

#### DETAILED DESCRIPTION OF THE INVENTION

Referring to FIG. 1, there is illustrated within a typical architecture for a prior art Hotspot 10. The range of application of the prior art Hotspot 10 is limited to a small area since the WAN interface 18 is fixed in location.

In the prior art system, an 802.11 Access Point 12 accepts connections from a plurality of 802.11 client devices 30. Coupled to an output of the 802.11 Access Point 12 a DHCP (Dynamic Host Configuration Protocol) module 14 assigns IP (Internetworking Protocol) addresses and configures other network settings (e.g. name servers, gateways) for the client devices 30 when they connect to the access point 12. The LAN Router 16 directs traffic from the access point 12 to the Internet 20 via the fixed WAN interface 18. The WAN interface 18 is typically a DSL or cable modem providing high-speed Internet access.

Referring to FIG. 2, a Mobile Hotspot System (MHS) 40 is shown in which Client devices 30 connect to the MHS 40 by an 802.11 access point 12 in the same fashion as they do to a standard hotspot. The key difference is the Internet connection is established via a mobile WAN interface 42 using a mobile WAN service such as 1xRTT or GPRS. The Mobile WAN Interface 42 allows the MHS 40 to be deployed in a moving vehicle (not shown). Typically, the MHS 40 would be installed in vehicles such as limousines and luxury vehicles given the current costs. However, as the costs for the hardware decrease over time, the MHS 40 will be installed in private vehicles as well as taxis, commuter buses, light rail, passenger and motor vehicle ferries and other mass transit systems.

FIG. 3 illustrates an alternative usage for the MHS 40, in which the MHS 40 acts as an 802.11 Client device when the vehicle is parked in proximity to an 802.11 access point 12. The MHS 40 can then use the relatively high speed 802.11 data link to update local content stored on the MHS 40. Unlike a conventional hotspot, the MHS 802.11 interface requires the ability to switch between client and access point modes.

The functional block diagram of the MHS 40, illustrated in FIG. 4, consists of the 802.11 interface 12 which is capable of acting as either a client device or an access point to support both operational modes as shown in FIGS. 2 and 3. The DHCP module 14 assigns IP addresses and configures other network information (name servers, gateways) for client devices 30 when they connect to the MHS 40. The DHCP module 14 performs no function when the MHS 802.11 interface 12 is operating as a client device.

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The LAN Router 16 controls access to the MHS 40. Newly connected clients are prevented from accessing the Internet 20 immediately as all Hypertext Transfer Protocol (HTTP) requests are intercepted and redirected to the local web server module 52 for user authentication. Once authentication is complete, all HTTP requests are transparently redirected to the local Web Cache module 58, while all other traffic from the authenticated client is passed directly to the Internet 20.

The LAN Router 16 also performs Network Address Translation (NAT). This allows all client devices 30 to share a single external Internet address. It also acts as a security measure, preventing hostile external entities from establishing connections to MHS client devices 30. The Web Cache module 58 is a performance optimization feature. Each HTTP request is analyzed to see if the requested data exists in the local cache 58. If a match or "hit" is found, the data is returned to the user directly from the cache 58 at much higher speeds than if the data had to be retrieved from the Internet 20.

The Web Server module 54 handles user authentication and provides local content 56. Local content 56 may include but not be limited to advertising, audio/video entertainment, local news and traffic data. The Local Content Module (LCM) 52 customizes the information presented to the user from the local web server module 54. The LCM 52 gathers position information from the onboard GPS module 68, if present, in order to tailor advertising, news and traffic information based on the location of the vehicle. The LCM 52 also analyzes web surfing patterns from the Web Cache module 54 in order to tailor advertising based on the interests of the customers using the service. The LCM 52 also detects when the vehicle is parked in proximity to an 802.11 access point and switches the MHS 40 into client mode, downloading bulky new content over the high speed link from the central OSS (operations support system) 80.

The DNS module 62 handles domain name resolution requests. These requests are issued by client devices 30 in order to translate human-friendly domain names (e.g. 'www.google.com') into their numerical equivalents (e.g. 123.456.789.555). The DNS module 62 resolves these requests via the slow WAN link on the first request but then caches the results so that subsequent requests are returned from directly from the DNS cache 60.

The WAN Manager module 70 monitors the state of the WAN connection. Like cell phones, the mobile WAN connection occasionally loses signal strength and drops the connection. The WAN manager 70 senses these dropouts and automatically re-initiates the call. The WAN manager 70 also sends a periodic beacon to the Web to confirm the WAN connection (see flowchart in FIG. 10). These operations dramatically improve the user experience by minimizing the outages the user sees. The WAN manager 70 also reports the state of the connection to the local content manager (LCM) 52 so that the user can see when they do and do not have Internet connectivity.

The Geographical Positioning Service (GPS) module 68 is a satellite-based system that can pinpoint the location of the MHS 40. This position information is logged with the OSS client 64 for vehicle tracking purposes and is also relayed to the Local Content Manager 52 for customization of local content.

The OSS client module 64 is an optional module installed when the MHS 40 is to be managed by a central OSS. It collects MHS operational statistics and makes them available to the central OSS via the Internet 20. In addition, the OSS client 64 provides administrative access to the unit via

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the Internet **20** so that basic maintenance can be performed without physically accessing the MHS **40**.

FIG. **5** illustrates architecture for the connection of multiple MHS units **40** to the Internet **20** and management of the MHS units **40** from a central OSS **80** via the Internet **20**.

FIG. **6** illustrates the aggregate web and DNS caching mechanisms for a network of MHS units **40**. Each MHS unit **40** reports its local web cache **58** and DNS statistics **60** to the central OSS **80**, which consolidates the information into lists of the most popular web sites and hostnames. During idle periods, the MHS units **40** retrieve these global popularity lists and update their web **58** and DNS **60** caches accordingly using the pre-loading logic shown in FIG. **8** and FIG. **9**. The priority between DNS pre-loading and web page pre-loading can be set either by the individual MHS **40** or from the OSS **80**.

FIG. **7** illustrates the authentication procedure followed when a client device **30** connects to the MHS **40**. The client device first **100** launches its Web Browser application and attempts to load a web page. The web server module **52** then checks **102** to see if the user of the device is logged in to the system. If the user is logged in, then the web page is loaded **108**. If the user is not logged in, then a welcome page with a login information request (i.e. user ID and password) is presented **104**. The login information is authenticated **106** and then further user requests are allowed to proceed to the Internet. Otherwise, the welcome page **104** is re-displayed requesting the user to enter the login information again.

The DNS pre-loading algorithm is shown in the flowchart in FIG. **8**. At this system start-up (**110**) the list of the most popular domain names is downloaded (**112**) from the central OSS **80**. During the idle cycle (**114**), if the system is idle, the next domain name on the list has its DNS address resolved (**116**). The list is checked for remaining domain names (**118**) and the process continues during MHS idle periods until the entire list has been resolved.

The web site pre-loading algorithm is shown in the flowchart in FIG. **9** and is similar to the DNS algorithm. After start-up (**110**) the list of most popular web sites is downloaded from the central OSS (**120**). During the idle cycle (**122**), if the system is idle, the root page of the next web site on the list is downloaded into the web cache **58** (**124**). Linked pages off the root page of the website are also fetched (**126**) up to a preset depth from the root page. This preset depth can be set to zero to cache only the root pages. The list is checked for remaining web sites (**128**) and the process continues during MHS idle periods until the entire list has been downloaded to the web cache **58**.

The flowchart in FIG. **10** shows the WAN manager beacon process. Once the WAN connection is established (**160**) the system waits for a preset period (**162**) before sending a beacon to the WAN to verify the connection status (**164**). If the WAN is connected (**166**), the system returns to the wait state (**162**). If the WAN is not connected (**166**), the system attempts to re-establish the WAN connection (**168**). The WAN manager will also attempt to re-establish the WAN connection whenever it receives a signal **170** from the WAN interface **42** indicating that the WAN connection is down.

While the above description of the MHS **40** is based on 802.11 and 3G wireless Internet standards, the system can be readily modified to be compatible with other short-range or

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long-range wireless standards, such as 2.0G or 2.5G (long-range). The MHS **40** is also fully upgradeable with advances in the wireless field, such as the proposed 4G network from IPWireless.

Accordingly, while this invention has been described with reference to illustrative embodiments, this description is not intended to be construed in a limiting sense. Various modifications of the illustrative embodiments, as well as other embodiments of the invention, will be apparent to persons skilled in the art upon reference to this description. It is therefore contemplated that the appended claims will cover any such modifications or embodiments as fall within the scope of the invention.

We claim:

1. A mobile wireless hot spot system, comprising:

- a) a short-range, high-speed wireless access point operative to communicate with short-range client devices;
- b) a long-range, wireless Internet access interface operative to communicate with the Internet; and
- c) a Local Area Network (LAN) routing system managing the data path between said wireless access point and said Internet access interface,

wherein said mobile wireless hotspot system is a stand-alone system that enables client devices configured for short-range, high-speed wireless Internet access to use said mobile wireless hotspot system to access the Internet without the need to access an external service controller server.

2. The system of claim 1, wherein said short-range, high-speed wireless access point uses 802.11 as a wireless standard.

3. The system of claim 1, wherein said hotspot system is integrated into a vehicle such that passengers in said vehicle are capable of accessing the Internet using said client devices.

4. The system of claim 1, further comprising local content module that stores content that can be accessed by said client devices directly through said high-speed access point.

5. The system of claim 1, wherein said LAN routing system includes a Geographical Positioning Service (GPS) locator to provide location information to said system and to said client devices, to enable dynamic tailoring of local content for services.

6. The system of claim 1, wherein said LAN routing system includes a website cache that allows said client devices to access information stored in said website cache directly through said high-speed access point.

7. The system of claim 4, wherein said system includes a short-range, high-speed wireless access interface to enable said system to download updates to said local content module using a fixed high-speed wireless access point.

8. The system of claim 1, further including an operation support system (OSS) module to monitor and share information with other mobile hotspot systems.

9. A method of providing a mobile wireless hotspot system for client devices requiring a short-range wireless access point, comprising:

- a) installing said mobile wireless hotspot system in a vehicle, said mobile wireless hotspot system including:
  - i) a short-range high-speed wireless access point;
  - ii) a long-range, wireless Internet access interface; and
  - (iii) a Local Area Network (LAN) routing system managing the data path between said wireless access point and said Internet access interface,

wherein said mobile wireless hotspot system is a stand-alone system that enables said client devices configured for short

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range, high speed wireless Internet access to use said mobile wireless hotspot system to access the Internet, both while said vehicle is in motion and when said vehicle is stationary, without the need to access an external service controller server.

10. The method of claim 9, further including providing an operation support system (OSS) for monitoring and sharing information between multiple mobile wireless hotspot systems.

11. The method of claim 10, wherein said OSS additionally compiles a list of frequently accessed domains and websites the information about which has been dynamically cached based on user activity, said list based on using data received from said multiple hotspot systems and said list can be downloaded into a local content module by individual ones of said hotspot systems.

12. The method of claim 11, wherein said list can further be used to pre-load websites and domains into a web cache on said multiple hotspot systems at startup.

13. The method of claim 9, further including providing a local content module in said hotspot system such that the content in said local content module can be accessed directly via said high-speed wireless access point.

14. The method of claim 10, wherein said mobile hotspot system includes a Geographical Positioning Service (GPS) locator to provide location information to client devices accessing said hotspot system and to said OSS, to enable dynamic tailoring of local content for services.

15. A network of mobile wireless hotspots, comprising:  
a) a plurality of mobile wireless hotspot systems installed in vehicles, each mobile wireless hotspot system including:

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i) a short-range high-speed wireless access point;

ii) a long-range, wireless Internet access interface; and

iii) a Local Area Network (LAN) routing system

connecting said wireless access point and said Internet access interface, wherein said mobile wireless hotspot system enables passengers in said vehicle to use said client devices to access the Internet both while said vehicle is in motion and when said vehicle is stationary and b) an operation support

system (OSS) operative to monitor and share information between said mobile hotspot systems on said network.

16. The network of claim 15, wherein said OSS compiles a list of frequently accessed domains and websites using data received from said multiple hotspot systems and said list can be downloaded into a local content module by individual ones of said hotspot systems.

17. The network of claim 16, wherein said list can further be used to pre-load websites and domains into a web cache on each of said hotspot systems at startup.

18. The system of claim 1, including a WAN Interface providing high-speed Internet access, a long range wireless Internet access interface (WAN) manager coupled to said WAN interface, and monitoring a WAN connection of said WAN Interface in order to provide a continuous connection to the Internet.

19. The method of claim 9, including monitoring a connection of a WAN Interface to the Internet to detect any loss of connection and then re-establishing the connection whenever it is lost.

\* \* \* \* \*